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ART. I. *The Poetry of Architecture.* By KATA PHUSIN.

No. 2. THE COTTAGE. — Concluding Remarks.

“Nunquam aliud Natura, aliud Sapientia, dixit.”

JUV.

IT now only remains for us to conclude the subject of the Cottage, by a few general remarks on the just application of modern buildings to adorn or vivify natural scenery.

There are, we think, only three cases in which the cottage is considered as an element of architectural, or any other kind of beauty, since it is ordinarily raised by the peasant where he likes, and how he likes; and, therefore, as we have seen, frequently in good taste.

1. When a nobleman, or man of fortune, amuses himself with superintending the erection of the domiciles of his domestics. 2. When ornamental summer-houses, or mimicries of wigwams, are to be erected as ornamental adjuncts to a prospect which the owner has done all he can to spoil, that it may be worthy of the honour of having him to look at it. 3. When the landlord exercises a certain degree of influence over the cottages of his tenants, or the improvements of the neighbouring village, so as to induce such a tone of feeling in the new erections as he may think suitable to their situation.

In the first of these cases, there is little to be said; for the habitation of the domestic is generally a dependent feature of his master's, and, therefore, to be considered as a part of it. Porters' lodges are also dependent upon, and to be regulated by, the style of the architecture to which they are attached; and they are generally well managed in England, properly united with the gate, and adding to the effect of the entrance.

In the second case, as the act is in itself a barbarism, it would be useless to consider what would be the best mode of perpetrating it.

In the third case, we think it will be useful to apply a few general principles, deduced from positions formerly advanced.

All buildings are, of course, to be considered in connexion
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with the country in which they are to be raised. Now, all landscape must possess one out of four distinct characters.

It must be either woody, the green country; cultivated, the blue country; wild, the grey country; or hilly, the brown country.

1. The Woody, or green, Country. By this is to be understood the mixture of park, pasture, and variegated forest, which is only to be seen in temperate climates, and in those parts of a kingdom which have not often changed proprietors, but have remained in unproductive beauty (or, at least, furnishing timber only), the garden of the wealthier population. It is to be seen in no other country, perhaps, so well as in England. In other districts, we find extensive masses of black forest, but not the mixture of sunny glade, and various foliage, and dewy sward, which we meet with in the richer park districts of England. This kind of country is always surgy, oceanic, and massy, in its outline: it never affords blue distances, unless seen from a height; and, even then, the nearer groups are large, and draw away the attention from the background. The under soil is kept cool by the shade, and its vegetation rich; so that the prevailing colour, except for a few days at the fall of the leaf, is a fresh green. A good example of this kind of country is the view from Richmond Hill.

Now, first, let us consider what sort of feeling this green country excites; and, in order to do so, be it observed, that anything which is apparently enduring and unchangeable gives us an impression rather of future, than of past, duration of existence; but anything which being perishable, and from its nature subject to change, has yet existed to a great age, gives us an impression of antiquity, though, of course, none of stability. A mountain, for instance (not geologically speaking, for then the furrows on its brow give it age as visible as was ever wrinkled on human forehead, but considering it as it appears to ordinary eyes), appears to be beyond the influence of change: it does not put us in mind of its past existence, by showing us any of the effect of time upon itself; we do not feel that it is old, because it is not approaching any kind of death: it is a mass of unsentient undecaying matter, which, if we think about it, we discover must have existed for some time, but which does not tell this fact to our feelings, or, rather, which tells us of no time at which it came into existence; and, therefore, gives us no standard by which to measure its age, which, unless measured, cannot be distinctly felt. But a very old forest tree is a thing subject to the same laws of nature as ourselves: it is an energetic being, liable to and approaching death; its age is written on every spray; and, because we see it is susceptible of life and annihilation, like our own, we imagine it must be capable of the

same feelings, and possess the same faculties, and, above all others, memory: it is always telling us about the past, never pointing to the future; we appeal to it, as to a thing which has seen and felt during a life similar to our own, though of ten times its duration, and therefore receive from it a perpetual impression of antiquity. So, again, a ruined tower gives us an impression of antiquity: the stones of which it is built, none; for their age is not written upon them.

This being the case, it is evident that the chief feeling induced by woody country is one of reverence for its antiquity. There is a quiet melancholy about the decay of the patriarchal trunks, which is enhanced by the green and elastic vigour of the young saplings; the noble form of the forest ailes, and the subdued light which penetrates their entangled boughs, combine to add to the impression; and the whole character of the scene is calculated to excite conservative feeling. The man who could remain a radical in a wood country is a disgrace to his species.

Now, this feeling of mixed melancholy and veneration is the one of all others which the modern cottage must not be allowed to violate. It may be fantastic or rich in detail; for the one character will make it look old-fashioned, and the other will assimilate with the intertwining of leaf and bough around it: but it must not be spruce, or natty, or very bright in colour; and the older it looks the better.

A little grotesqueness in form is the more allowable, because the imagination is naturally active in the obscure and indefinite daylight of wood scenery; conjures up innumerable beings, of every size and shape, to people its alleys and smile through its thickets; and is by no means displeased to find some of its inventions half-realised, in a decorated panel or grinning extremity of a rafter.

These characters being kept in view, as objects to be attained, the remaining considerations are technical.

For the form. Select any well-grown group of the tree which prevails most near the proposed site of the cottage. Its summit will be a rounded mass. Take the three principal points of its curve; namely, its apex (*c*), and the two points where it unites

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itself with neighbouring masses (*a* and *b*, *fig. 75*). Strike a circle through these three points; and the angle contained in the segment cut off by a line joining *a* and *b* is to be the angle of

the cottage roof. (Of course we are not thinking of interior convenience: the architect must establish his model of beauty first, and then approach it as nearly as he can.) This angle will generally be very obtuse; and this is one reason why the Swiss cottage is always beautiful when it is set among walnut or chestnut trees. Its obtuse roof is just about the true angle. With pines or larches, the angle should not be regulated by the form of the tree, but by the slope of the branches. The building itself should be low and long, so that, if possible, it may not be seen all at once, but may be partially concealed by trunks or leafage at various distances.

For the colour, that of wood is always beautiful. If the wood of the near trees be used, so much the better; but the timber should be rough-hewn, and allowed to get weather-stained. Cold colours will not suit with green; and, therefore, slated roofs are disagreeable, unless, as in the Westmoreland cottage, the grey roof is warmed with lichenous vegetation, when it will do well with anything; but thatch is better. If the building be not of wood, the walls may be built of anything which will give them a quiet and unobtruding warmth of tone. White, if in shade, is sometimes allowable; but, if visible at any point more than 200 yards off, it will spoil the whole landscape. In general, as we saw before, the building will bear some fantastic finishing, that is, if it be entangled in forest; but, if among massive groups of trees, separated by smooth sward, it must be kept simple.

2. The Cultivated, or blue, Country. This is the rich champagne land, in which large trees are more sparingly scattered, and which is chiefly devoted to the purposes of agriculture. In this we are perpetually getting blue distances from the slightest elevation, which are rendered more decidedly so by their contrast with warm corn or ploughed fields in the foreground. Such is the greater part of England. The view from the hills of Malvern is a good example. In districts of this kind, all is change; one year's crop has no memory of its predecessor; all is activity, prosperity, and usefulness: nothing is left to the imagination; there is no obscurity, no poetry, no nonsense: the colours of the landscape are bright and varied; it is thickly populated, and glowing with animal life. Here, then, the character of the cottage must be cheerfulness; its colours may be vivid: white is always beautiful; even red tiles are allowable, and red bricks endurable. Neatness will not spoil it: the angle of its roof may be acute, its windows sparkling, and its roses red and abundant; but it must not be ornamented nor fantastic, it must be evidently built for the uses of common life, and have a matter-of-fact business-like air about it. Its outhouses, and pigsties, and dunghills should, therefore, be kept in sight: the

latter may be made very pretty objects by twisting them with the pitchfork, and plaiting them into braids, as the Swiss do.

3. The Wild, or grey, Country. "Wild" is not exactly a correct epithet; we mean wide, unenclosed, treeless undulations of land, whether cultivated or not. The greater part of northern France, though well brought under the plough, would come under the denomination of grey country. Occasional masses of monotonous forest do not destroy this character. Here, size is desirable, and massiness of form; but we must have no brightness of colour in the cottage, otherwise it would draw the eye to it at three miles off, and the whole landscape would be covered with conspicuous dots. White is agreeable, if sobered down; slate allowable on the roof, as well as thatch. For the rest, we need only refer to the remarks formerly made on the propriety of the French cottage.

Lastly, Hill, or brown, Country. And here, if we look to England alone, as peculiarly a cottage country, the remarks formerly advanced, in the consideration of the Westmoreland cottage, are sufficient; but, if we go into mountain districts of more varied character, we shall find a difference existing between every range of hills, which will demand a corresponding difference in the style of their cottages. The principles, however, are the same in all situations, and it would be a hopeless task to endeavour to give more than general principles. In hill country, however, another question is introduced, whose investigation is peculiarly necessary in cases in which the ground has inequality of surface, that of position. And the difficulty here is, not so much to ascertain where the building ought to be, as to put it there, without suggesting any enquiry as to the mode in which it got there; to prevent its just application from appearing artificial. But we cannot enter into this enquiry, before laying down a number of principles of composition, which are applicable, not only to cottages, but generally, and which we cannot deduce until we come to the consideration of buildings in groups.

Such are the great divisions under which country and rural buildings may be comprehended; but there are intermediate conditions, in which modified forms of the cottage are applicable; and it frequently happens that country which, considered in the abstract, would fall under one of these classes, possesses, owing to its peculiar climate or associations, a very different character. Italy, for instance, is blue country; yet it has not the least resemblance to English blue country. We have paid particular attention to wood; first, because we had not, in any previous paper, considered what was beautiful in a forest cottage; and, secondly, because in such districts there is generally much more influence exercised by proprietors over

their tenantry, than in populous and cultivated districts; and our English park scenery, though exquisitely beautiful, is sometimes, we think, a little monotonous, from the want of this very feature.

And now, farewell to the cottage, and, with it, to the humility of natural scenery. We are sorry to leave it; not that we have any idea of living in a cottage, as a comfortable thing; not that we prefer mud to marble, or deal to mahogany; but that, with it, we leave much of what is most beautiful of earth, the low and bee-inhabited scenery, which is full of quiet and prideless emotion, of such calmness as we can imagine prevailing over our earth when it was new in heaven. We are going into higher walks of architecture, where we shall find a less close connexion established between the building and the soil on which it stands, or the air with which it is surrounded, but a closer connexion with the character of its inhabitant. We shall have less to do with natural feeling, and more with human passion; we are coming out of stillness into turbulence, out of seclusion into the multitude, out of the wilderness into the world.

ART. II. *On the System and Principles pursued by the Gothic Architects, from the Eleventh to the Fifteenth Centuries inclusive, in the Embellishment by Colour of the Architectural Members and other Parts of their Religious and Civil Edifices.* By FREDERICK LUSH.

“Colour and form alike their powers engage
In trophies of the proud baronial age;
Azure and crimson, green and gold unite,
Friezes and chapiters, in glory dight,
Blaze with imposing splendour o’er the sight.
Enamell’d flowers their graceful foliage twine,
And pictured mouldings thread the golden vine:
Fair in their form, and glorious in their hue,
They blend harmonious, and the mind subdue.”

J. EDMESTON.

ONE of the strongest feelings that are common to our nature is curiosity; and anything that is new, or grand, or beautiful, is apt to raise this appetite, which will be satisfied only by investigation. We cannot fail to be struck with that power and greatness of talent which are displayed in our cathedrals; but it is when overawed by the solemnity imparted to these piles by the brilliancy of colour, and the effect produced by their painted windows, that we would fain know the principles which guided the artists of these noble conceptions.

Without loitering at the threshold of this essay by enquiring into that which is foreign from my design (namely, the extent to which the art of colouring their buildings obtained among the ancients, or whence it was derived), I will proceed at once to

enter it; the subject being one that is worthy of the architect, and not devoid of interest to the antiquary.

Although the monastic life may justly be blamed, and the learning of the monk is often deemed useless, yet it is to the former we owe almost every thing connected with literature and the fine arts; and on the latter rest our after acquirements in knowledge. Long before the time when the venerable Bede lived and wrote, the light that now shines with such brightness in our own days shed her influence over the land; but its force was not enough to dispel the gloom of superstition, which then overshadowed the cloister. There were, however, in his age, schools where architecture, sculpture, and painting grew and were fostered with care; and, censure, as we may have cause to do, the conduct of the monks, it was, in truth, this set of men who were good architects; and they were not only the authors of many valuable treatises on science, but the chief artists who painted ecclesiastical buildings in fresco.

Contemporary with Bede was Benedict Biscop, a monk, founder of the monastery at Weremouth, and one of the first who introduced the arts into England. Biscop was wont to repair to Rome, and thence brought over several artists, who, as Bede tells us, constructed his church after the Roman fashion. He also sent to France for those skilled in making and staining glass, with which he ornamented the church of St. Peter, belonging to the Abbey of Weremouth; but before that period, at which the manufacture of glass was unknown in Great Britain, the windows of the most costly buildings had been filled with fine linen cloth or latticed woodwork. (*Stuart's Dict. of Architecture.*)

Archbishop Wilfrid, in the year 674, built the abbey church of St. Mary, at Hexham, which is a fine instance of Anglo-Saxon architecture. (A view is given by Mackenzie in his *Hist. of Northumberland*, 4to, 1825; and in the *New Monasticon*.) It is thus described by Richard de Hexham, a historian who flourished A. D. 1180, when it was still remaining (I quote only so much as is proper to my object):—"The walls themselves, with the capitals of those columns which supported them, as also the coved ceilings of the sanctuary, were decorated with histories, statues, and various figures projecting in sculpture from the stone, with the grateful variety of pictures, and with the wonderful beauty of colours." (*Stuart's Dictionary.*) In this and later periods, the inside of the churches was one mass of splendour; but the sanctuary was the centre of attraction: the shrines, the statuary, the lofty screen before the high altar, the painted ceiling, all form a scene, which, whilst it is quite consonant with the imposing rites of the fane, kindles awe and begets high emotions. As in the churches erected by Constantine in By-

zantium, Asia Minor, and Syria, the roof was ornamented with tiles of gilt brass, and the walls, the columns, and pavements incrustated with variegated marbles; so, in these early churches, built on the plan of the basilicas, large stone and marble columns, or columns faced with thin laminæ of marble, sustained the roof, which was covered with lead or gilt tiles. The church of St. Germain des Prés, one of the oldest in Paris, begun by Childebert in 557, was in the shape of a cross; and, if we may rely upon the description by Gislemer, a monk of the abbey, its ceiling was gilt, the walls set off with colours on a gold ground, the pavement composed of rich mosaic, and the roof covered with gold. (*Whittington's Historical Survey of the Ecclesiastical Antiquities of France*, &c. : 4to, 1809.)

The era of Charlemagne gave rise, it is true, to many edifices; but they may, perhaps, be regarded great as to their size alone. His palace and church at Aix-la-Chapelle present a debased style, similar to that which prevailed in Italy and Rome itself. The most costly and beautiful columns were placed beneath diminutive arches, and high masses of wall were disfigured with rude painting, or had glittering, but gaudy, mosaic work. The intellect of the architect seems to have been clouded: at any rate, it did not shine with that lustre which broke forth in the eleventh century, when the various cities and provinces, especially of France, strove to outvie each other in works of architecture.

There was one, born about 925, whom I would notice by the way: his name was Dunstan. He was a good scholar, and master of all the mathematical science then known; besides which, he used to practise painting and engraving, and took impressions from metals. "Præterea nam aptus ad omnia, facere potuit picturam, litteras formare, scalpello imprimere ex auro, argento, ære, et ferro." — *Gervasius de St. Dunstano*. (*Pownall's Essay on Ancient Painting in England*, vol. ix., in the *Archæologia*.) This same man, St. Dunstan, designed a pattern for a sacerdotal vestment, which a religious lady worked in threads of gold. In the same century, a drapery on which were delineated the actions of Brithnod, duke of Northumberland, was presented by his widow, Edelfleda, to the church of Ely; and before this, Witlaf, King of Mercia, in a charter to the Abbey of Croyland, gave, among other things, a golden veil, embroidered with the siege of Troy, to be hung up in the church on his birthday.* Thus we learn that the

* *Pictorial History of England*, p. 320. l. 11. — The exterior vestibule of the church of St. Sophia at Constantinople, built by Justinian, was hung with aurea vela, vela auro contexta et variegata. Gregory of Tours, describing the baptism of Clovis at Rheims, writes:—"Velis depictis adumbrantur plateæ ecclesiæ. Curtinis albenibus adornantur." — *Hist. Franc.*, 11. 31. (*Whittington*, as above.)

arts of embroidery were employed for adorning religious houses; and, since their wall hangings were often very gorgeous, we may infer that they heightened the character of those buildings. Amongst females of the higher ranks, embroidery was considered an accomplishment: nor was the other sex behindhand in the art of painting; and to those who excelled in it much respect was paid.

Pardon, reader, the foregoing digression; but by it a chasm is filled up in this history, or rather sketch, which serves only to usher in that which more immediately concerns us. I think not it is in nowise related to what has gone before and follows, since, in the middle ages, tapestry sometimes supplied the place of painting on the walls; though, perhaps, there are materials of a more pertinent kind, which have not crossed my path.

In the eleventh century, the walls and ceilings of the castellated palaces and churches were of wainscot, ornamented with gilding and painting. In these cathedrals, where the Norman style prevailed, the roofs were composed of wood in rafters only; but, as architecture improved, they were connected by panels, which were plastered or painted blue, with gold stars, as we find in ancient crypts; and sometimes painted in a kind of mosaic of several colours. (*Warton's Hist. of Poetry.*) Stubbs, in his *Actus Pontificum Eboracensium*, when speaking of the works performed under Archbishop Aldred, shortly before the Conquest, says: "Totam ecclesiam a presbyterio usque ad turrim ab antecessore suo kinsio constructam, superius opere pictorio quod cælum vocant auro multiformiter intermixto, mirabile arte construxit." (*Pownall*, as above.) The old Canterbury Cathedral partially rebuilt by Lanfranc, and completed by Anselm, who evinced equal, if not more taste and ability than his predecessor, is recorded as having been so glorious, that no building in England could vie with it, whether as regarded the transparency of the glass windows, the brightness of the marble pavement, or the elegance of the paintings, which drew the eyes of all beholders to the roof above. (*William de Malmsbury.*)

The two celebrated abbeys at Caen, that of St. Stephen built by William the Conqueror, about the year 1068; and that of the Holy Trinity, by his queen, Matilda; were fine examples of the Norman style. On the outside of the wall of a chapel, built before the Abbey of St. Stephen, were painted in fresco the figures of King William, his queen, and their two sons, Robert and William, supposed to have been coeval with its foundation. Matilda, in the year 1082, endowed the Abbey of the Holy Trinity, called *l'Abbaye aux Dames*, founded for Benedictine nuns, with so much munificence, that William de Poitiers, Archdeacon of Lisieux, said she enriched it more than any emperor had done in the preceding time. (*Ducarel's Anglo-Norman Antiquities.*)

Not before the latter part of the twelfth century (that is, between the years 1177 and 1199, when the nave of Peterborough Cathedral was erecting), have I lighted upon any record of colour, either in religious or civil edifices. The ceiling of Peterborough Cathedral was at the same time painted, and was of wainscot, formed into three main compartments; each being again separated by lozenges and half lozenges. The fillets, mouldings, and rosettes were gilt; a fret antique ran round the panels as a border; and on the wood within this were the painted figures, which were, in the opinion of the individual who repaired the ceiling, 'oil, as the colours became clear to the eye upon a sponge being applied. Gov. Pownall, however, asserts that oil was not the vehicle in this case, as both size and other varnishes were known in the twelfth century; but adds, "The discovery of an oil varnish, or the drying oils used in limning, was not, I believe, yet brought forward."*

The very old painting in Westminster Abbey, over the tomb in which are deposited the wooden images of our ancestral kings, most unjustifiably ycleped the Ragged Regiment, and among them Sebert, who originally founded Westminster Abbey, is acknowledged to be coeval with the refoundation of the abbey by Henry III., in the fifth year of his reign. It was painted on a piece of wainscot, paneled in different compartments, and bore a rather strong rubbing with a wet handkerchief. Underneath the plaster, which crumbled betwixt the fingers like chalk, a coat of parchment was glued upon the paneling. (*Pownall*, as above.)

Availing ourselves now of the passages which refer to colouring edifices, among the documents in the Pipe and Close Rolls of the reign of Henry III., inserted in Walpole's *Anecdotes of Painting*, we read, in the twelfth year of Henry III., that his treasurers and chamberlains are commissioned to pay to a certain painter 20s. for painting the great Exchequer Chamber. The next record intimates the kind of painting to be undertaken:—

"Anno 1233, 17 Henry III., Mandatum est Vicecomiti Southton, quod Cameram regis lambruscatam de castro Winton, depingi faciat eisdem historiis et picturis quibus fuerat prius depicta, &c.

"1233. Payments, anno 17 Henry III. Precept to the Sheriff of Southampton, that he shall cause the king's chamber wainscot, in Winchester Castle, to be painted with the same pictures as formerly," &c. From this precept, it is very plain that the wainscot in the apartments of royal dwellings was painted with historical subjects, sacred or profane; and, as such histories are

* Pownall, as above.—There existed, Le Noir informs us, at Paris, in several religious houses, paintings in fresco, and with white of eggs, which had been executed in the twelfth century.

desired to be renewed, it leads us to conclude that the custom was known some time before this period: and in the 35th of Henry III. a mandate is given for painting the history of Antioch: but of this anon. Raspe, *On the Discovery of Oil-Painting*, p. 52., says, on the authority of the *Domesday Book*, that "the history of the royal household, of the board of the king's works, of the English painters, sculptors, architects, and other artists, may be traced backward far beyond the time of King Henry III., nay, even beyond the period of the Norman conquest, in the eleventh century; and that there is no occasion for looking upon the first painters and other such artists as foreigners to this kingdom."

An order dated 1236 bids the treasurer to have the great chamber at Weston painted with a good green colour, after the manner of a curtain, against the king's arrival; and on the gable of the same chamber, near the door, these words to be painted: — "Ke ne dune kene tine, ne pret ke desir;" i. e.

"He who has and does not give,
Will not, when he wants, receive."

The following record alludes to a star-chamber, and is the first mention we have of the walls and ceilings being set, as they were, with golden stars upon a ground of green or blue, an imitation of the visible heaven: but space afforded full scope for invention, and it was not confined merely to this resemblance of nature.

"Liberat. Anno 1238, 22 Henry III. Mandatum est vicē. Southampt. quod cameram apud Winton colorari faciat viridi colore, et stellari auro, in quibus depingatur historiæ veteris et novi testamenti." The next extract from the *Rotuli*, respecting the palatial decoration, was issued in his twenty-third year, 1239, and implies a part of the history of colouring in oil, the date and discovery of which have by some been determined in John Van Eyck. It runs thus: — "Rex thesaurio et camerariis suis salutem. Liberate de thesauro nostro Odoni aurifabro et Edwardo filio suo centum et septemdecem solidos et decem denarios pro oleo, vernici, et coloribus emptis, et picturis factis in camerâ reginæ nostræ, apud Westm. ab octavis sanctæ trinitatis anno regni nostri xxiii. usque ad festum sancti Barnabe apostoli eodem anno, scilicet per xv dies."

"The king to his treasurer and chamberlains. Pay from our treasury to Odo the goldsmith, and Edward his son, one hundred and seventeen shillings and tenpence, for oil, varnish, and colours bought by them, and for pictures made in the queen's room," &c.

Before the time of the brothers Hubert and John Van Eyck, by whom oil-painting may be said to have been restored, the

colours for painting were mixed with a preparation of glue or the white of eggs, which, we are told, was used by Cimabue, in *Walpole's Anecdotes of Painting*; wherein is an account of the process employed in painting on walls, from Sandrart, which I here transcribe: — "When they painted on walls, lest their work should crack, they proceeded in this manner: they glued a linen cloth upon the wall, and covered that with plaster, on which they painted in distemper. This was thus prepared: they dropped into the yolk of an egg the milk that flows from the leaf of a young fig tree; with which, instead of water, gum, or gum-dragant, they mixed their last layer of colours." Walpole adds, "It is probable, from the last words of this passage, that they laid their first colours with water or gum only."

There is here, and elsewhere, sufficient evidence to show that, whilst "Henry, son of John," sat on the throne, painting was pursued with much diligence; but not in one branch alone: the curious, as well as useful, art of illuminating MSS. had been brought to great perfection. This monarch was an exemplary patron of the arts, and kept certain painters about him, among whom William, a monk of Westminster, William of Florence, and William of Colchester were the most eminent; and these, with others under them, he employed to adorn his palaces with historical pictures, illustrative of subjects in the Old and New Testaments, or with particular occurrences in the lives of his predecessors. Thus, the valiant exploits of Richard I. in the third crusade,

"Against whose fury and unmatch'd force,
The aweless lion could not wage the fight," SHAKS.

afforded a favourite theme both to the artist and the poet, and were among the earliest historical pieces which were portrayed by the former. "Claus. 35 Hen. III. Mandatum est Edwardo de Westm. quod depingi facit historiam Antioch. in camerâ regis turris London. sicut ei dicet T. Espernir, et custum quod ad hoc posuerit, rex ei faciet allocari. Teste rege apud Winton. v. die Junii."

"Close Roll. 35 Hen. III. Precept to Edward of Westminster, that he cause to be painted the history of Antioch in the king's chamber in the Tower of London, as T. Espernir shall direct him; and the cost which he shall incur to be allowed by the king," &c. It is said that this history of the Crusade was also painted in a small room in a garden at Westminster, probably a summer or banqueting-house; and that, from Antioch having been the scene in which Richard Cœur de Lion signalised himself in arms, the place was thence called the Antioch Chamber. It was likewise commemorated at the Palace of Clarendon, in Wiltshire, with the single combat of King Richard about fourteen years previous. (*Walpole's Anecdotes.*)

Painting on, or staining, glass is first mentioned in the Close Rolls of the 20th Henry III. 1236. An order, dated 1241, noticed by Stowe, for the repairs of the White Tower (so called from an early practice of whitening externally its walls), states that in the chapel of St. John three glass windows were to be made, representing a little Virgin Mary with her child, the Trinity, and St. John the Evangelist. (*Bayley's History and Antiquities of the Tower of London*, p. 107.) Painted glass is generally considered as having been first connected with architecture in Henry III.'s reign; though Lord Orford, on the authority of Dugdale, refers the first painted glass in England to King John's time; from which statement, Fosbrooke (*Encyclopædia of Antiquities, and Elements of Archæology, Classical and Mediæval*: 2 vols. 4to, London, 1825.) is inclined to differ; and Dallaway remarks, in that work, to which he added many valuable notes, that there was no known introduction of stained glass into England prior to the reign of Henry III.*

Terminating the reign of Henry III., the longest that occurs in the annals of England, save that of George III., we gather, upon a review of the life of Edward I., that, although the prince and the people were alike prone to battle, yet the fine arts were still cherished by some. Painting did not lie dormant; and then it was that Gothic architecture arose in all her stateliness.† It

* Note, p. 38., by Dallaway, in *Anecdotes of Painting*. In the abbey of St. Denis, in France, are some painted windows, which Abbot Sugerius placed there about 1150. Engravings of these are to be found in *Le Noir's Musée des Monastères Français, Histoire de la Peinture sur Verre*, p. 63. The most ancient painted glass now existing in England is in Canterbury Cathedral.

† The following are the materials for the emendation of the pictures in the king's Great Chamber, as the Painted Chamber was then called, from the Roll bearing the same date as the foundation of St. Stephen's Chapel; viz. April 28. 20th Edward I.: — "White lead, at 2d. per lb.; three quarts of oil at 9d.; a measure of green (*verdeggris*), at 1½d.; another of vermillion, at 2½d.; sinople varnish, ochre, plaster, thread, and skin." (*Britton and Brayley's History of the ancient Palace and late Houses of Parliament at Westminster*.)

On the removal of some old tapestry, in 1800, in the Painted Chamber, the paintings on the walls were numerous large figures, and the battles of the Maccabees. They were as old as 1322; as one Symeon, a friar minor, and doctor in theology, in that year wrote an *Itinerary*, now in the library of Bennet College, Cambridge, in which occurs the subjoined passage, quoted by Gray, in a letter to Horace Walpole, in 1768, and first published by Warton in his *History of Poetry*: — "Eidem monasterio quasi immediate conjungitur illud famosissimum palatium regium Anglorum, in quo illa vulgata camera in cujus parietibus sunt omnes historiæ bellicæ totius Bibliæ ineffabiliter depictæ, atque in Gallico completissime et perfectissime constanter conscriptæ in non modica interentium admiratione et maxima regali magnificentia." "Near this monastery stands the most famous royal palace of England, in which is that celebrated chamber, on whose walls all the warlike histories of the whole Bible are painted with inexpressible skill, and explained by a regular and complete series of texts, beautifully written in French, over each battle, to the no small admiration of the beholder, and the increase of royal magnificence."

was the spirit of enthusiasm, and the zeal of enterprise, the daring ingenuity of man, which called forth those mighty creations that excite such wonder within us. But can we assign the cause of that pleasure which we experience in contemplating them? There was a system upon which they acted, but of that we know very little. Of this, however, I am sure, that, as in colouring the parts of their edifices, so in form, proportion, intricacy, and arrangement of ornament, in every thing which made up the grand design, they were guided by principles; they studied effect; they aimed at producing a whole which would work upon the mind of the beholder; their desire was to fix his thoughts, and lead him to feel the force which such works exert upon the sense. Thus, upon the brotherhood, upon a band of men so active and zealous in the cause, were engrafted motives which prompted them to undertakings far beyond our utmost endeavours.

I may refer to the use of one thing not lost sight of, nay, much adopted, by the architects of the middle ages in ornamenting their edifices; and that is allegory, whereby life is given not only to all those arts which are direct imitations of nature, but may be happily applied to architecture, through the medium of sculpture. It is to be regretted that allegory is now so unheeded, since it is the means of conveying ideas, and opens a field for pictorial embellishment, which did not lie uncultivated in former times. King Edward the First's Council Chamber at Westminster was adorned with allegorical representations of the divine Law, and the Gospel, the true Vine, and the Day of Judgment. So are the Cathedral of Rochester, and the *Lieb Frauen Kirche* at Trèves, the Cloisters of Norwich, the Chapter-House at York, and the Stadt-House at Nimeguen.*

To come to another portion of the far-famed palace at Westminster; the Prince's Chamber, or old Robing Room, exhibited on the jambs of the windows figures which were painted; and round the upper part of the chamber there had been oil-paintings of angels holding crowns. Several capitals were also found which had been richly gilt and painted (blue and red) in oil colours: on two of them were the busts of Edward I. and Eleanor, his queen, carved in Reigate stone, and coloured to resemble life: the hair and crowns were gilt. (*Britton and Brayley*, as above.) To the varnish which protected the surface of the gilding we may attribute its preservation; and, with respect to the colours, the oil with which they were tempered defended them from the access of air, &c.; but their permanency depends

* See Palgrave's *Truths and Fictions of the Middle Ages*. A series of ancient allegorical, historical, and legendary paintings in fresco were, not long since, discovered on the walls of the Chapel of the Holy Cross, at Stratford on Avon. These will shortly be published.

likewise upon the quality of the various animal, vegetable, and fossil substances out of which they are made.

Oil was the vehicle in the painting on the monument of Edmund Crouchback, in Westminster Abbey, as a letter inserted in Carter's *Ancient Sculpture and Painting* clearly proved. It is ascribed to Pietro Cavallini, an Italian painter, and the inventor of mosaic; but this is a question which can be answered only with hesitation: the fact has not, I believe, been truly decided. To this monument we will annex an account from Gough's *Sepulchral Monuments*, which describes in what manner the several parts were painted.* "The canopy of stone over this tomb consists of three trefoil pointed arches, one in the centre, and one lesser on each side of it. Each of these arches is surmounted by a double pediment, separated from the arches by a pilaster, which slopes back in three several stories, and is painted white, checquered with double red lines, in every other square of which is a red cinquefoil (the two uppermost slopes serving as a base to a painted flowered niche), and terminates in a rich purfled finial. The mouldings at the four angles, or weatherings, of the lesser pediment, as well as the two of the greater, are decorated with bunches of oak leaves; and from among those of the centre pediment project four brackets, which originally supported as many angels, whole length, in a standing posture, as expressed in Sandford's print. Each pediment terminates in a bouquet of oak leaves. The ground of the large pediment is painted of a dark blue, sprinkled with golden fleurs-de-lis. The spandrels and interstices have also been painted with plain grounds, or foliage, and the arch-work of the pilasters inlaid with pieces of blue and red stained glass, set in so firm a cement, that it is not easy to dislodge the smallest piece without cracking it. Within the points of the lesser pediments are carved, in high relief, a bunch of oak leaves issuing from a stalk, and a head of an animal surrounded by foliage, bearing some distant resemblance to a modern cherub with six wings. The inside, or ceiling of the canopy, was a sky with stars of gold, on a blue ground, by time changed into a dull red; and within the leaves of the trefoil of the arch were painted the vine tendrils, and elegant foliage, as on Aveline's monument. The inside of the weatherings of all the six pediments is painted and gilt in distemper, with coats of arms in oblong squares; those on the centre or large pediment, which has nineteen on each side, being divided by a red square charged with a six-foil." (Vol. i. pt. 1. p. 70.)

It is reported in the MS. of the *Lives of the Abbots of Glou-*

* See the coloured plates in Stothard's *Monumental Effigies of Great Britain*, in which literary treasure the figures are restored as they were originally painted and decorated.

cester, from Serlo, the first abbot, to the death of Walter Procester in 1412, that John Wygmore, a person of much cultivated taste, desired that his great dining-room should be painted with portraits of all the English sovereigns who preceded Edward II., by the time a sumptuous feast should be given there, at which he would be present. (*Walpole's Anecdotes of Painting*, with notes by Dallaway, p. 40.) It was customary to hang up in the ancient halls the portraits and arms of distinguished persons, with their names painted on a tablet. The same was observed upon the occasion of grand entertainments, when each knight suspended his shield behind him; a practice which led to the introduction of sculptured works; and, as these were decked with gorgeous colouring, they must have been an internal embellishment which added considerably to the splendour of castle halls and other edifices which contained them.*

In that style of architecture which followed the Early English, called the Enriched English, or the Decorated Gothic, and which flourished to the end of Edward III.'s reign, heraldic ornaments were abundantly used by architects; and at that time it was usual for warriors to dedicate trophies to a propitiatory saint, over whose shrine they were suspended. Subsequently, the bearings of the knights, and the proceedings of jousts or tournaments, were painted in fresco on the walls, or stained on glass, whereon was sometimes seen the shadow of the departed knight, with his hands clasped in prayer, and, as it was then expressed, *revêtu de son blazon*. (*Donaldson on Heraldry, and its Connexion with Gothic Architecture*.)

St. Stephen's Chapel, Westminster, rebuilt by Edward III., surpassed in its construction, and the profuse show of internal decoration, every other in England, and rivalled La Sainte Chapelle at Paris.† The ornamental painting and glazing of this chapel were commenced about 1350, and the works were carried on for several years afterwards. The account of expenses in the Fabric Rolls supply us with very satisfactory information respecting the artists and master-workmen, chiefly our own countrymen, who were employed, and also include some notices connected with the history of oil-painting. Hugh de St. Albans appears to have been the foreman; as he is styled, in the Patent Rolls, "the disposer of the works of the painters, and orderer of the drawings." To the chief artists were intrusted

* Dallaway on *Heraldry*. Distemper painting applied to the emblazoning of arms, either upon wood or stone, was with colours prepared with oil and resinous gums. (p. 37.)

† La Sainte Chapelle, at Paris, was built by St. Louis; begun in 1248, and finished in 1274, from the designs of Pierre de Montreuil, an eminent French architect, in 1275. The interior was so excellently carved and painted, under the inspection of Raoul, the famous goldsmith, that it had, previously to the erection of St. Stephen's Chapel by our Edward III., no rival in point of splendid embellishment. (*Dallaway's Discourses on Architecture*.)

the power of choosing their assistants, and making them serve under the king's wages.

I will now lay before the reader some scraps from ancient memoranda, thinking they tend to throw much light upon the subject in hand.*

"1351. June 18. To John Tynbetre (i. e. the tin-beater), for $\frac{1}{2}$ lb. of teynt, for the painting of the angels, 1s. 8d." After the fire which consumed the Houses of Parliament, almost the only vestige of the once magnificent paintings indicated figures of angels, carrying before them fine tapestry hangings. There are several items of payment to J. Tynbetre for "leaves of tin, to make the pryntes for the painting of the chapel." Another item is for one pair of sheers to cut the leaves of tin. The prints were placed on the marble columns in the chapel; and a writer in the *Gentleman's Magazine* (vol. v. new series, p. 35.) says that, "since the fire of October, 1834, on one of those marble columns he saw one of them which had indeed entirely lost all its colours by the action of the flames; but its substance was still considerable, and raised in high relief upon the marble. It is pretty clear that they were produced by what is now called stencil-work. Perforations were made in the leaves of the tin, according to the parts required to be covered with a certain pattern; and thus a thick coat of paint was worked into the cavity, and left on the surface in high relief, having almost the same effect as modern mouldings in putty, composition, or *papier mâché*, and, at the same time, of a variety of brilliant colours."

"1351. June 20. To John Elham and Gilbert Pakering, painters working on the chapel, as well on the tablements as on the printing of the east end of the king's chapel, six days at 10d. per day, each 10s." On the same (for, as appears from the entries on the Rolls, the windows of St. Stephen's Chapel were painted, whilst the other embellishments were made in the interior of the building), "Master John de Chester, glazier, for working on the drawing of several images for the glass windows of the king's chapel," had the weekly wages of 7s. John Athelard, John Lincoln, Simon Lenne, John Lenton, and Godman de Lenton, five master-glaziers, for working there on similar drawings, the lower wages of 6s. per week.

"June 20. To William Eus, and fourteen other glaziers, working at the chapel, on the cutting and joining of the glass for the windows, &c." Hence, we may suppose that the painted

* See Smith's *Antiquities of Westminster Abbey*, which gives several coloured engravings of specimens of painting and painted glass from St. Stephen's Chapel; exhibiting, as the author states, every colour known in the practice of staining glass. Those of sculpture show with what colours the architectural members were painted.

windows were, for the most part, executed by glaziers. There were some whose business it was to shape, lay, and join the glass after the process of annealing. The tables on which the designs for the painted windows were drawn were whitened and washed with beer; and the glass was cooled with it when vitrified.

"June 26. To John Lightgrave, for 600 leaves of gold for embellishing the tablements of the chapel, at 5s. per 100, 1*l.* 10s." The quantity of gold leaf used was very great, and of great purity: it was thicker than what is ordinarily obtained. For the gilding, the surface of the stone was first made smooth, to receive some coat of colour with oil, over which the gold leaf was placed, and which was afterwards covered with white, or transparent, varnish.

"July 16. To Edward Paynell, and three others, laying on gold and *pryntes* in the chapel, at 5*d.* per day each, 12s.

"July 24. To the same, and five others, for making *pryntes*, and placing them in the chapel, five days as before, 15s.

"To Master Hugh de St. Albans, for 4 flagons of painter's oil, 16s.

"To the same, for two flagons of cole, 2*d.**

"To the same, for a pound and a half of oker, 3*d.*; and for half a pound of cynople, for painting the upper chapel, 17s. 3*d.*

"August 13. To John Lightgrave, for 300 leaves of silver, for the painting of a certain window to counterfeit glass, at 8*d.* per 100.

"To the same, for 2 lbs. of vert-de-grece for the same, 1s. 8*d.*

"To the same, for 3 lbs. of vermilion, for the same, 6s."

Vermilion was one of the most prevalent colours in the architectural members. Vermilion or red lead, with oil, was found by Mr. Haslam, who made a chemical analysis of all the pigments, to be immediately painted on the stone, as a priming.

"August 15. To Lonyn de Bruges, for 6½ lbs. of white varnish, at 9*d.*, 4s. 10½*d.*

"For thirty peacocks' and swans' feathers, and squirrels' tails, for the painters' pencils, 2½*d.*

"August 27. To Nicholas Chaunser, for fifteen ells of canvass, to cover the images of the kings to be painted, 6s. 8*d.*

"September 3. To George Cosyn, for one quartern of royal paper, to make the painters' patrons [patterns], 10*d.*

"September 19. For 1 lb. of hog's hair, for the painters' pencils, 1s.

"October 3. To John Lightgrave, for 51 lbs. of white lead, for painting the chapel, at 2½*d.* per pound, 10s. 7½*d.*

* Among the prices of colours and materials for the painting at Ely, are "four bushels of scrowes, or shreds of leather, to make size called cole, 18*d.*" (*Stevenson's Supplement to Bentham's Ely*, folio, 1817, p. 65.)

"October 10. To Thomas de Dadyngton and Robert Yerdele, grinding different colours for painting the glass, five days, at 4½d., 3s. 9½d." Silver filings, geet (or jet), and ornement (or orpiment) are enumerated among the articles required for painting on glass.*

Closing the account of St. Stephen's Chapel with these extracts, let us now turn our attention to the painted and stained glass in this century.

Great, sublime, and beautiful was the accession to architecture by the glass of many colours, which intercepted not only the light of heaven, as it pierced through the windows, but cast upon the painted surface of the walls a rich variety of tints, so admirably in unison with the glazed floor and high uplifted roof.

Gothic tracery had, about the reign of Edward III., reached its zenith of excellence; and at this period the architects bestowed much care, as well in designing their windows as in depicting subjects on them. They were divided by mullions, and finished in their heads by segments of circles and rosettes; in which there were elegance of form and graceful flow of outline. In the divisions produced by its ramifications, escutcheons, or coats of arms, were diapered in their proper colours, and mosaics, foliage, and grotesques, on a ruby or other ground. The vertical compartments were generally filled with the figure of a prophet, patriarch, king, or ecclesiastic of the higher orders, shrouded in a niche, beneath a canopy; while a pedestal, or the armorial bearings of each, occupied the space below; the whole being bordered by roses, fleurs-de-lis, oak or vine leaves.†

A singular specimen of design on painted glass at this period, is the window on the north side of the chancel of Dorchester Church, Oxfordshire, which represents the patriarch Jesse lying on his back on the window-sill, with a stem growing out of his body, and spreading itself into five branches on each side. These branches constitute the mullions and tracery of the window, and support in all twenty-five statues, the progeny of the patriarch, which was predicted in chap. xi. of Isaiah, v. 1.:—"And there shall come forth a rod out of the stem of Jesse, and a branch shall grow out of his roots." This was a favourite

* On the Fabric Rolls of Exeter Cathedral, dated 1318-19, is charged 12d. for an iron plate to grind colours on; and in that of 1320-21, considerable quantities of verdigris and vermilion are mentioned. The decorative finishing of the interior of the cathedral, by gilding and painting, was executed under Bishop Lacy. In the Roll of 1437-38, John Budde, "peyntor" of Exeter, is paid 101s. for painting fifty-seven nodi (keystones, or bosses,) in the south ambulatory. (*Britton's Exeter Cathedral.*) For some curious documents on the painting of walls and windows, see Dugdale's *Antiquities of Warwickshire*, p. 355, 356.

† Such as these are etched and coloured in Carter's *Ancient Painting and Sculpture*, vol. ii.

subject for glass-painting or tapestry; and Fosbrooke weaves it into his poem, the *Economy of the Monastic Life*, in this couplet:—

“ And windows erst, where, robed, a gorgeous show
Of Jesse’s honour’d race were ranged, a tinted row.”

The exact period when stained glass was first introduced into the houses of kings and nobles is uncertain. Our morning star, Chaucer, in his *Drime*, v. 312., describes the story of the siege of Troy, as painted on the windows of his own house; and from this we may infer that such embellishments were not confined to ecclesiastical edifices of the fourteenth and fifteenth centuries. But we have an authority which removes all doubt, if any exists, on this point. Le Noir informs us that Charles V. of France, who lived in the time of Chaucer, ornamented not only his chapels, but the apartments in his castles, with stained glass.

In the year 1405, the great east window in York Minster was executed by Thornton of Coventry, which he was to finish in less than three years. For his own work he received 4s. a week; and the glass, which he supplied, cost 1s. a square superficial foot, before it was formed into figures and put up.* In the designs for large windows, and in the disposing of tints, an evident improvement took place, as was the case with a variety of enrichments admitted by our Gothic architects into church architecture in all its ornamental parts. The glaziers furnished the stained glass, which was cut into various shapes, and enclosed with lead, as the colours were required. A pattern sheet, or design, called a “vidimus,” from which the windows were wrought, was prepared by the same artists who painted the walls in fresco. In the founderies, the glass was made of different colours: it was a practice, therefore, with the ancient artists to arrange such pieces in some sort of symmetry, like mosaic-work; and this, which was very simple, gave the first idea of painting on glass. This assemblage of pieces, or panes, was in time dispensed with, and more regular designs attempted. Figures and entire histories were represented, which were drawn upon white glass, and the colours tempered with size, as in distemper painting. As our early artists knew not the principles of *chiaro scuro*, they compensated in some degree for the want of them by drawing the contours of the figures in strong outline, hatching the draperies in black. A bright transparent red was chosen for the flesh-colours, upon which they drew with black the features of the face and other parts of the body. When this kind of painting was much improved, and was used by the Gothic architects

* This window is engraved in Drake’s *Eboracum*; or, the *History and Antiquities of the City of York*: folio, 1736. The upper part is a piece of elaborate tracery, filled with whole-length figures and portraits; the rest is divided into squares, which take in almost the whole history of the *Bible*.

for adorning churches, basilicas, &c., the colours became incorporated with the glass itself, by exposing them to the fire after they had been laid on. (*Rees's Cyclopædia*: and *Hawkins's History of the Origin and Establishment of Gothic Architecture, with an Inquiry into the Mode of painting upon and staining Glass, as practised in the Ecclesiastical Structures of the Middle Ages*; 8vo, London, 1813.)

All the cathedral, conventual, or larger parish churches of the fifteenth century, had many spacious windows of stained glass, exhibiting figures individually placed, sometimes accompanied by angels, clothed in peacock's feathers, who held the escutcheons. Windows * at Cirencester, in Gloucestershire, show, from being recomposed from the fragments of many others, —

“ Shapes that with one broad glare the gazer strike,
Kings, bishops, nuns, apostles, all alike.”

T. WARTON.

Stained †, or painted, glass was more generally to be seen in castles and private houses of the nobility, during this century. (*Hist. of Stained Glass in England*; *Gent. Mag.*, vol. lxxvii. part 1., 1817.)

Of that finished style of pointed architecture, in the time of Henry VII., is the Priory Church at Malvern, which has been designated “another Westminster Abbey.” Henry VII. embellished this church with stained glass windows, of unrivalled execution, and possessing great boldness of design, not inferior to the masterpieces of M. Angelo. ‡ The two circular ends of the church, at the approach to the nave, are partly faced with glazed tiles, covered with writings, and various ornaments common to heraldry. The pavement of the church, which has been despoiled of many of its tesserae, is inlaid with similar tiles; but much conjecture has arisen respecting their origin.

* Coloured in Lyson's *Magna Britannia*, Gloucestershire.

† The ancient method of glass-painting still remains the same; and it is a false notion that the art has ever been lost; under patronage, and with the advance of chemistry, we can achieve even more than the ancients; but the past will blind us to the advantages which we possess in our own times. I may notice a window now executing for Upwell Church, near Wisbeach, by Messrs. Hoadley and Oldfield, which shows that England can boast of artists in this way equal in talent to any in the world. At Huddersfield, Yorkshire, there has recently been put up an east window by Messrs. Ward and Nixon, which bears me out in my assertion as to the fallacy of the opinion so much entertained. In this performance there are some splendid ruby tints, which would vie with those of old.

What is literally called *stained glass* is not so expensive as the public imagine. The pigments made use of by the artist in the present day are nearly all derived from metals; but Mr. Nixon informed me that silver alone stains glass, and by it we may get every shade of colour, from the palest yellow, going on to orange, up to a deep red; and it leaves no visible alteration on the surface, differing, in this particular, from all our other colours.

‡ See *Brayley's Historical Illustrator*, from which the subjoined account is deduced.

The size of these tiles, mostly of a red or brown colour, is about $1\frac{1}{2}$ in. square, and $1\frac{1}{4}$ in. thick. The arms and letters were impressed upon them whilst soft, and the parts that were sunk filled up with differently coloured clays, as orange, &c.; the whole being partially vitrified. But there were other tiles that our forefathers used, which were of a more perishable nature, from having the devices merely painted on the surface, and baked in. On the greater number of the tiles is an inscription in old English characters, which would read as follows, when divested of its quaint and obsolete orthography: — “Think, man! thy life will not endure for ever. What thou dost thyself, of that thou art sure; but that which thou leavest unto thy director’s care, it is but a chance that it will ever avail thee.” (*Brayley*, as above, p. 181.)

The conventual and the parochial churches were supplied with tiles from the greater abbeys, that were provided with kilns, for the purpose of preparing them after the manner of porcelain; and the monks, who manifested so much ingenuity in these things, having acquired a knowledge of this branch of encaustic painting, amused their leisure time by designing and finishing them. (*Dallaway’s Inquiries into the Origin and Progress of the Science of Heraldry in England*. 4to. Gloucester, 1793.)

Often was the great expense at which the regular clergy adorned the sumptuous architecture of their monasteries made the theme of scorn and satire by the poets of these times; assisted as they were in their productions by the usages which then prevailed: and there was no object for which the Dominicans, in particular, so eagerly solicited money as for stained glass for their chapels.

Towards the close of the fifteenth century, as *Dallaway* acquaints us, *John Fane*, a wealthy merchant of London, embarked in a Spanish vessel, bound from a Flemish port for South America, laden with stained glass; and made known his liking to the storied windows, by building a church in the Gothic style for its reception. (*Anecdotes of the Arts*.) Thus, in those days were sown the seeds of perverted religion. Gaudy and mystical pictures pampered the pride of the people, and misled the ignorant poor. But can we wonder that the founders of churches evinced their partiality for those blazoned windows, which teemed with such beautiful imagery? for, at mid-day, when the sun’s rays poured forth their flood of dazzling light; or at night, when the moon shed her beams across the chancel, illumined by large waxen lights placed about the altar; the effect must have been truly captivating and sublime.

March, 1838.

ART. III. *Notes on modern Architecture.* By AMICUS.

No. 4.

MUCH display is frequently seen in street architecture, but it is not always governed by good taste. In Store Street, Bedford Square, there is a row of unpretending houses, which, for simplicity and harmony, deserve to be noticed, although they cannot boast of any great stretch of imagination or originality. The ground stories are occupied by shops, which have a continued cornice, unbroken, and supporting the balconies of the one-pair floors; thus forming a line of connexion which gives an agreeable unity to the design. The shops project some little distance from the wall of the houses; and the balconies, forming part of the projection, give the appearance of an additional decoration, rather than a necessary adjunct to them; and, as the shop fronts are of a less substantial material, the idea of weakness is not so apparent as when they are placed within the walls of each house; and, had the occupants been content that the same colour should be carried through the whole building, more particularly in this story, the harmony would have been nearly complete. More substantial pilasters would have added to the consequence, as well as the consistency, of the design. Thus much for the shop fronts, which are always difficult things to manage. The houses are decorated, on the one pair, with architraved windows, having segmental pediments over them; the second and third floor windows have also architraves; between these floors is a modillioned cornice, just sufficiently rich to produce a somewhat sparkling effect of light and shade, and not too rich for this description of houses. The windows are coupled; but, as the vertical channel, slightly sunk at the party walls, marks distinctly the separation of the houses, I do not so much object to this arrangement, as necessity, in a great measure, may be the cause of it. Three windows would have crowded the exterior, and one would not have been sufficient, without making it too wide for the interior, and thereby injuring the effect of the exterior simplicity of the design. One, or three, windows is best, in point of design, for the interior of a room; as the centre is then defined, and the eye is not disturbed by the division of light. I hold it a material part of composition, that prominent effects should not be divided. A centre window produces a body of light forming a main and leading feature; and it gradually becomes less important as it recedes to the farthest parts of the room. Three windows produce the same effect; but two divide the light, and a shadow is thrown by the central pier where light is required. In these houses, as my intention is merely to speak of external effect, this objection is pointed out in this place only as a general hint.

The vertical channel marking the boundary of each house leaves nothing for deception: the imagination will never recognise one building by this row; they are what they appear to be, distinct and separate; yet they are united in point of composition, and produce, collectively, harmony of design, and, individually, fitness and propriety, equally satisfactory to the mind. The segmental pediments over the windows may be objected to by some; but I do not myself see so much objection to this form as even that of the two inclined planes, which always conveys the idea of the end of a roof. I look upon pediments over windows, generally, as an additional ornament, serving to give consequence as well as shelter; but, as they abut against the wall, the segment is, perhaps, as little objectionable as the angular one, and it conveys less idea of the termination of a roof. Horizontal cornices are decidedly the most correct in this situation; but I may be called over-fastidious, if I say other forms should be totally rejected. Although there is little in these houses that can be said to be removed from the every-day style, they present a far better study for reasonable architecture than all the affected "crankums" of would-be originality, which mark many of the productions of our streets. In these houses, the necessary wants of the occupants appear to have been studied; the shops, to display their articles of trade advantageously; and the windows of the upper stories, to admit sufficient light for the comforts of private life. These are the mere necessary requisites: holes in the wall are absolutely enough for this purpose; but, in a country of high civilisation, something more is sought for. The necessary vanity created by our station in society must needs be satisfied, and this is to be done only by outward show, which, when governed by reason, assumes a high mental character. Now, as architecture first supplies our wants, then our wishes, and ultimately satisfies our minds, let us take these standards for our precedents, and note some of the buildings we are constantly seeing.

First, let us once more refer to the houses in Store Street; the continued line of the ground floor, and balconies over; the similarity of the windows of the first floor, marking a less degree of decoration than the shops, where all importance is centred; the rows of equal-sized windows in the two-pair and three-pair floors, each assuming its proper degree of ornament; the enriched cornice, which apparently marks the place of a floor, or tie to strengthen and give solidity to the design, and, from its consequence and situation, properly enriched; and the upper cornice simple and unimportant: these, together, form a reasonable design, equally satisfactory to our physical and mental senses. It has been said that these simple rules, if strictly adhered to, would be the means of limiting our designs, and

fettering genius, which should not be restrained in its flights of imagination; it would also strip architecture of its entire decorations; the Doric triglyph, the Ionic dentil, and Corinthian modillion, with their different grades of enrichments, would be banished at one fell swoop. Not so; for, whatever style of architecture we may wish to imitate, its characteristics may be carried out perfectly in accordance with these rules. If we only commence, in designing a building, by divesting ourselves as much as possible of all the known architectural forms we have been so constantly imitating, to the exclusion of all original art, decoration suited to the subject will necessarily arise out of the bare materials. The uses of the building, the station of the occupants, and the materials of construction, are alone sufficient to form our design upon; and it is quite impossible to conceive to how great an extent of dignity, grandeur, and ornament this might lead.

The houses now erecting opposite the Victoria Gate, Hyde Park, except the centre, form a very good general design, in what I may call the imitative style of architecture; but an attempt to give a higher degree of decoration to the "hole in the wall" of the centre houses completely disunites the design. The simplicity of the architraved windows, in an uninterrupted line, is more agreeable and satisfactory, from their appropriate decoration, as well as their necessary form and situation, than the highly decorated windows of the centre compartments. A row of houses of such extent as this row is to be, and where the object is to produce uniformity of design in one great mass, unless some degree of variation be introduced, in form or detail, frequently becomes monotonous: but the great difficulty is to produce that variety, and, at the same time, to preserve the unity of the composition. The centre may be considered the point from which every thing should emanate, and to which every thing should tend and be linked: a decided alteration of forms will always be fatal to the composition, and, I think, these houses illustrate the fact. The cornices are the only connecting lines in the building; the windows of the centre are totally opposite, in design, to those of the sides: this is enough of itself to destroy the unity which it was intended to convey. But the windows of the centre assume a decoration which appears to have no connexion with any other feature in the buildings. I presume the style of architecture which it was intended to imitate is Palladian. With regard to the sides, the imitation can scarcely be complained of; but the three-quarter columns, with pedestals, entablature, and, I believe, pediments over them, merely forming a decoration to the windows, are completely out of place. This arrangement is applied to the ground and one-pair floors, with only the variation of the order

of architecture. The lines of the entablature are not continued on the face of the wall (which, had this been the case, would have improved them in some degree), but abruptly return against it; and, to add to these incongruities, the entablatures are broken into three parts, and the one in the centre into five parts. The effect of this great mass of centre buildings is now completely destroyed. Here might have been shown some bold and vigorous imagination, that would have combined with the sides, and produced a design worthy of the size of the houses, and the situation in which they are placed. By the introduction of the orders on such an insignificant scale, the windows actually appear of shorter proportions than those of the sides, in consequence of their being encumbered by their dressings. In every respect, in this part of the buildings, the orders are injudiciously applied; for we generally consider the style of architecture completely marked by the order employed. For instance, Whitehall Chapel is in the Italian style, with two orders, Ionic and Composite: these are proper characteristics of the decoration of this building, as the whole of each story is occupied by its order, and the plinths and cornices are presumed to mark the different floors, and to form the connecting ties and bearers; but this is not the case in the buildings at Bayswater. Here the style may be called Italian; but the orders are placed in such situations, that they cannot mark the distinction between floors, nor can they convey to us the idea of strengthening ties by the entablatures, or of efficient supports by the columns. I have, in a former paper, observed that columns should stand out from the wall, and in such situations as would give to them importance; and, as we always associate them in our minds as the main props of a building, when they depend upon that building for support, their utility is violated, their dignity humbled, and they can no longer be considered as essential supports to the fabric.

The Royal Institution, in Albemarle Street, presents a formidable appearance in street architecture, for it must come under that title. I know many persons have called it a strictly classical design, and say it is perfectly beautiful; but these opinions arise from the want of a strict reasoning knowledge of architecture. What I have endeavoured to point out, as some of the leading rules of composition, are very easily attained by non-professional persons, and, with little observation, would serve as a basis upon which to found their criticism.

When you do not see the windows; when you are unacquainted with the fact that the columns are little more than halves; in short, when you are in such a situation in the street as to get a distant view of the columns alone, gradually diminishing in perspective, you are rather struck with the richness of

the building; but every step you approach towards it, by as many steps it recedes in your estimation: you are first certain that the columns are not what they appeared to be; they do not stand alone; the deeply recessed portico vanishes from your mind; and the magnificent portal, which you had instinctively conjured up as the mighty entrance to this gorgeous fabric, is for ever erased. However you might feel inclined to treasure in your mind the unbidden vision, you are soon forced to descend to facts, stubborn facts: no less than three floors are crowded within the space of one; or what ought to appear one, for there is no line between them, and no connexion of string course, that in the least indicates the fact that the three are distinct floors; the little windows are squeezed up within their confined spaces, like mere peep-holes; and the doors (for there are three of these openings, to bring our lofty visions to realities) are small and mean, and without the least decoration to distinguish them from the windows. Had the building been only decorated in the windows and doors, without any ostentation of Corinthian columns, a substantial design might have been produced: even enrichments might have been carried to a great extent; and the very difficulties which the subject presented, by a little stretch of imagination, might have been the means of triumphant success. But, alas, for architecture! Is she never to shake off her trammels? Would we had never known the great works of antiquity, if our knowledge is only to be used in their misapplication!

As soon as an opportunity occurs for the erection of a magnificent building, the memory of the architect is strained for precedent. Visions of all the gorgeous palaces of ancient Rome, and the simple grandeur of the Athenian Acropolis, flit before his eyes; temples on temples crowd on his imagination, and he flies to the traveller's stores. Greece and Rome are at once reproduced upon his paper; and, surveying his work with gratification, he points out to his admiring friends the temples and columns he has scrupulously copied in his design! A few high-sounding names, judiciously applied, complete his success, and his hearers lift up their hands in amazement, and cry, "Beautiful!" "Classical!" "Wonderful genius!" &c.

London, March, 1838.

ART. IV. *Candidus's Note-Book.*

Fasciculus XI.

"Sicut meus est mos,

Nescio quid meditans nugarum; et totus in illis."

I. BLANK panels are no better than gratuitous solecisms in architecture; inasmuch as, while they are introduced for the nonce,

and without the slightest plea of utility, they are worse than unmeaning, because they only point out what is omitted. No one, as far as I know, ever yet took it into his head to decorate an apartment by hanging up empty picture-frames in it; yet the absurdity in the one case would be no greater than in the other: for what is a panel sunk in the face of a wall, except a frame for a subject in relief, or sculptured ornament of some sort. Nay, more frequently than not, so far from contributing in any degree to embellishment, they give an air of penury and poverty to a building, being left quite bare in themselves, without mouldings of any kind to serve as a finishing. Nevertheless, we must suppose some architects have considered them highly tasteful and ornamental, from their making such frequent use of them: besides which, it must be confessed that they have the recommendation of being wonderously cheap; for, while they cost nothing to execute, neither do they put the architect to the expense of a single idea.

II. I have just been looking over, for the first time, Dubut's *Architecture Civile* (Paris, 1803), in which I have been greatly disappointed, even in the execution of its outline plates, they being, with the exception of the frontispiece, which is nearly the only good thing in the work, very tame and spiritless. In regard to the designs themselves, they exhibit a most wearisome monotony, whether taken collectively or individually, and much extravagance in their general idea, attended with no less frigidity in the working it out; affected pomposity without any approach to richness, and no variety in detail. In fact, there is hardly an idea to be derived from them all put together; although it would seem that the main use of such collections of mere designs is, to suggest hints that may afterwards be turned to account. In regard to internal decoration, which one would imagine to be not the least important part in domestic architecture, the work is an absolute blank; for, although there are sections, they are allowed to exhibit no more than bare walls, and mere openings for doors, without even the most ordinary architectural finish. The only novel and really good idea in the book is that of showing in one plate the relative sizes of all the plans, drawn to the same scale. This deserves to be adopted in similar publications, and would be particularly interesting and useful, besides serving, in some measure, as a table of contents, in Stuart's *Athens*, Desgodetz's *Rome*, for instance; one plate being made to contain all the plans, a second all the façades of the buildings illustrated in the other engravings.

III. It is somewhat tantalising on the part of Woods, that he has not given any sketch of what would, I dare say, have been quite a novelty to most of his readers, infinitely more so than the subjects of many of his cuts, and an exceedingly welcome one

also, unless he has greatly overrated the thing itself in his account of it. Speaking of the Palazzo Mattei at Rome, he tells us that in the lower court are some valuable fragments of architectural ornaments, built up in the walls; "and, in particular, two semicircular windows, where the rich foliage, which occupies a part of the opening, shows that the ancients knew how to produce an effect somewhat similar to that of the tracery in our Gothic windows, and in some respects superior to it, without at all departing from the character of their own architecture." So, then, it seems there is a genuine classical novelty in store, which no one, not even Woods himself, has yet served up to us upon paper.

IV. Greatly is it to be hoped that, whatever may be erected in the centre of Trafalgar Square, it will not be another huge column. There is already one thing too many of the kind in the metropolis; a single specimen of what excludes all variety or design being quite sufficient to satisfy the most voracious curiosity. What reason can be argued in favour of having a column on that site, I know not: certainly, there are several reasons against it, independently of the one included in the above remark. In the first place, there is the York Column just by; in the second, a lofty column would hardly serve as a foil either to the National Gallery, or any of the other buildings; in the third, it would itself suffer by comparison with the steeple of St. Martin's Church, which is nearly 200 ft. high. Let it be the proposed monument to Nelson, or anything else, which is to embellish that site, I should say it ought to be designed with reference to the existing buildings, so as to set them off to as much advantage as possible, instead of in any degree overpowering them. If it must, at all events, be a column, at least let it not be such a one as belongs to an entablature, but something of a rostral pillar, a professedly ornamental, and certainly most picturesque, object. Then, if a statue of Nelson is to be placed on the summit, those of other naval commanders might very suitably be put on the prows jutting out from the shaft; so as to be attached to the shaft itself. In addition to these, there might be zones of bas-relief cincturing the shaft at intervals, while other sculpture might be introduced in the lower part of the design—namely, that which would constitute the base, or platform, supporting the pillar itself.

V. Welby Pugin has just broken out afresh into a strain of invective more furious than ever. His delectable lecture at St. Mary's College, Oscott, where it seems he has been appointed Professor of Ecclesiastical Antiquities, teems with indiscriminate abuse of the whole profession. According to him (for he does not qualify his censure by any kind of exception), the architects of the present day are, one and all, little better than quacks and

empirics, dabbling in all styles, and understanding none. Of course, Welby considers that he is as infallible as the pope himself; nevertheless, every one is not bound to abide by his opinion, particularly as he demands implicit faith in it, taking no trouble to bring forward either argument or criticism in support of it; though his opinion itself amounts to a declaration that we are all completely in the wrong, and, therefore, need most prodigiously to be set right. Nevertheless, Welby Pugin may, perhaps, show his good sense in abstaining from criticism, being doubtless aware that indiscriminate abuse is one thing, and criticism quite another.

VI. However they may differ in other respects, all books on perspective agree in one, which in itself is the reverse of commendable; namely, in giving for the exemplification of the rules the most tasteless objects. No doubt, the simpler the examples are, the better; yet it does not therefore follow that there is any occasion for their being absolutely uncouth and ugly, not to say perfectly hideous, as is very frequently the case. On the contrary, it seems desirable that (although such is not the express and main purpose), whilst learning perspective, the student ought also to acquire a feeling for elegance of form and design; whereas now, supposing him to have any taste at all, he is likely to be disgusted with the study itself, merely in consequence of the deformities it is rendered the vehicle of. If not for the sake of the learner, an author ought, for his own credit's sake, to show that, besides being acquainted with perspective, he is also an *elegans formarum spectator*. The same number of lines that are requisite for describing a clumsy kitchen table would suffice to express a piece of furniture of classical design. *Cæteris paribus*, likewise, it takes no more time nor trouble to delineate a pleasing well-proportioned building, than it does one that is absolutely frightful. Nevertheless, it seems almost to be considered a maxim, that the ugliness of the subject tends to set off the perspective, and give it an additional value. It is not, indeed, to be expected that every teacher of perspective should be also an accomplished designer; yet, although he may not be able to invent good illustrations, he can surely select agreeable examples for his purpose from among buildings, &c., that really exist, or else from drawings.

VII. It is hardly worth while to say anything further relative to Parsey's doctrine, or to notice what has been alleged against me by Q., and another correspondent, at page 191., further than to observe that they are exceedingly precise matter-of-fact gentlemen, and somewhat slow of comprehension. No one, I conceived, could misapprehend me when I took the liberty of recommending the Tower of Babel as a very suitable subject for Mr. Parsey; yet Q. very gravely sets me right, by explaining what I am just as well aware of as himself, as he might have

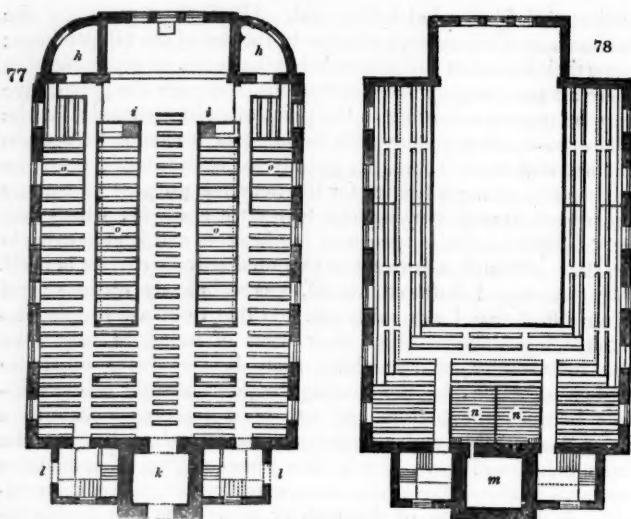
conjectured from what I then said. He further questions the correctness of my remark relative to the cut of the Glyptotheca: nevertheless, I must still contend that the mode of representation there adopted is graphically erroneous, although the perspective may be correct according to the point of sight assumed; for the plain reason, that it shows the building as it cannot be seen in reality, and shows it, besides, greatly to disadvantage; therefore amounts to taking a licence for the perverse purpose of making the object appear very inferior to what it really is; which may very fairly be called a species of falsification, and is erroneous in practice, although a drawing so executed may be correct in itself. My meaning, I flattered myself, was sufficiently obvious; yet I now find that I was mistaken, and that there are people who think it ingenious to show their want of *nous*. I may take this opportunity of remarking that, besides being otherwise highly objectionable, the placing the point of sight nearly midway between the bottom and top of a building occasions a most disagreeable and anti-picturesque formality, because the lines below will have nearly the same degree of inclination upwards as those above have downwards, which, where unavoidable, as in the case of the interior of a room just double the height of the eye, is awkward enough; and, when the same effect is produced purposely, quite contrary to the truth of the subject, it becomes positively offensive, I might say intolerable.

ART. V. *Design for a Church.* By EDWARD BRIGDEN, Architect, Bristol.

THE object principally held in view in this design is the attainment of the greatest accommodation for a congregation (in point of numbers), with as small an expenditure as the nature of the case allows.

It is adapted for the neighbourhood of a manufacturing district. The majority of the sittings being free; and as, of course, economy in such cases is an object of importance, the style is plain and simple, partaking somewhat of the Italian character. This edifice may be constructed either of brick or stone; and, if the stone were of that quality that its outward appearance might not be pleasing, the walls could be stuccoed.





This method, if common wall-work in random or rubble stone were introduced, would be the cheapest.

The arrangement will be seen by the plans of the ground and gallery floors.

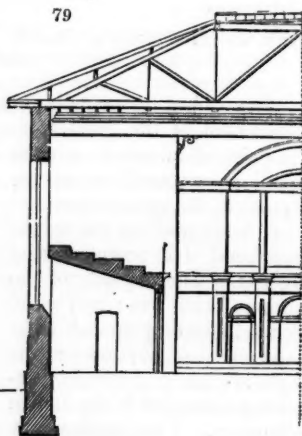
Fig. 77. is the ground plan, in which *h h* are vestries, &c.; *i i*, the pulpit and reading-desk; *k*, entrance under tower; *l l*, the staircases to the gallery. The body of the church is 85 ft. by 60 ft., and it is principally fitted up with free sittings. The pews (*o o*) are marked with a black line.

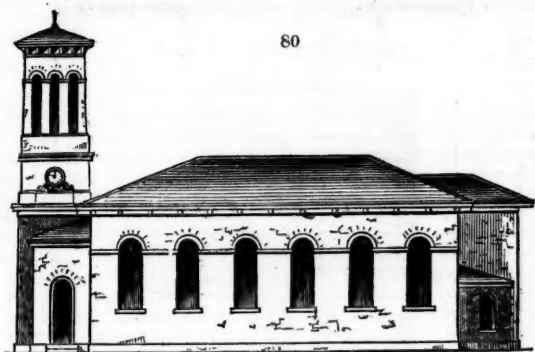
Fig. 78. is the gallery plan. In this, *m* is the belfry, and *n n* the children's seats.

Fig. 76. shows the west elevation, and *fig. 80.* the south elevation.

Fig. 79. is half the transverse section, showing the seats for the children, and the construction of the roof.

Fig. 81. is the elevation of the gallery front, in which the system of arches adopted in the general features of the design is kept up. This sweep should be formed of deal, which should

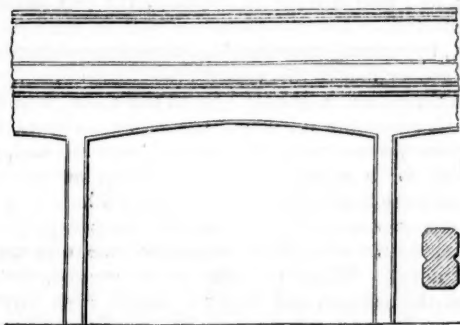




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case the real support, or beam, inside. This beam is to be supported on iron pillars, also cased to the form shown in *fig. 79*, and grooved, to give them an appearance of lightness.

All the figures are drawn to a scale of $\cdot 14$ of an inch to 10 ft.



81

This church will contain, on the ground floor, 310 pews and 520 free seats; on the gallery floor, 672 free seats, and 120 children's seats; making in all 1622 sittings.

The expense of building such an edifice, of course, depends upon its locality; but it may be stated, on an average, at from 5000*l.* to 6000*l.*; though, in some situations, it might cost a little more.

Bristol, July, 1836.

ART. VI. Notice of an Improvement to a Cottage Fireplace.

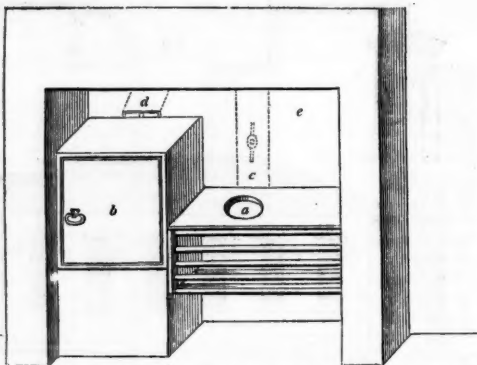
By M. SAUL.

I HERE send you a plan of a cottage fireplace, which is found to have several great advantages over the old plan.

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From inspection of the drawing (*fig. 82.*), I presume it will be understood that on the grate is fixed a cast-iron plate with a circular aperture in the centre at *a*. It is $8\frac{1}{2}$ in. in diameter, which just takes a common tea-kettle, and answers well for other-sized pans, as I find it is of no moment, the pan being larger than the aperture. By this plan the heat is confined in the grate; and, by several experiments, I have proved that anything will much sooner boil in this closed grate than in an open one; and it also throws out a greater heat in the room, and prevents smoke; and, when the fire is not wanted for cooking, there is a plate to cover the aperture. It also consumes less fuel, and is a sure remedy for a smoky chimney. When an oven is also made in the same fireplace, as seen at *b*, the whole heat is made to pass upon the oven by turning the damper in the flue *c*, which is behind the iron plate; when the smoke is carried up the oven flue (*d*). When the oven is not wanted, the flue *d* is closed with the damper, and then the smoke rises through the flue *c*. A small aperture is made on the top of the iron plate at *e*, to admit any smoke that may arise when putting on the fuel, or changing the kettles or pans.

This plan may be adopted to any grate now in use. It is only necessary to get a cast-iron plate the size of the grate. It is to rest upon the top bar of the grate, and on the brickwork on the back; and a small aperture is to be made for the smoke to escape, and an iron plate fixed in front, to prevent the smoke from entering the room.

This closed grate I first adopted in my garden tower, which I have lately built on the north road, about one mile from Lancaster; so that, when I and my friends go to spend an hour or two there, I can in a few minutes have it well heated, and hot water prepared either for tea, coffee, or punch.

Sulyard Street, Lancaster, Dec. 1837.

MISCELLANEOUS INTELLIGENCE.

ART. I. Domestic Notices.

ENGLAND.

A JET D'EAU upwards of 80 ft. high. — "On March 9. 1838, the inhabitants in the vicinity of the Elephant and Castle, Newington Butts, and the numerous passers by at those busy and crowded thoroughfares, were astonished by the singular spectacle of a column of water suddenly bursting forth at the corner of the New Kent Road, and rising to the surprising height of upwards of 80 ft. For about twenty minutes, this magnificent *jet d'eau* maintained an altitude of upwards of 60 or 70 feet. The cause is said to have arisen from the following circumstance:— A turncock in the employ of the Vauxhall Water-Works Company had been in the habit of leaving the keys, or turning implements, used for the main pipe, at a butcher's shop in the Kent Road. A plumber in the neighbourhood procured the keys, and turned off the main at a time when the Company's works, assisted by a new forty-five-horse power steam-engine, were in full action, forcing the water to Dockhead, Rotherhithe, and the utmost limits of their extensive ramifications in that direction. Such was the resistance ere the catastrophe, that the action of the steam-engine was impeded full two minutes; until, being taxed to its utmost power, a ferrule on the main pipe was forced out, thereby preventing the engine's destruction, and consequent demolition of the Company's Works, with a loss of life and property that might have occurred to a frightful and incalculable extent. The consequence, however, was, that the whole body of water so forced, exceeding five tons per minute, fell on the Rockingham Arms, and the roofs of Messrs. Williams and Sons' extensive premises adjoining thereto, which latter were for the time completely submerged, and their valuable stock of mercery and drapery greatly damaged, and partially destroyed; the deluge, in its progress, carrying with it the ceilings throughout their buildings." (*Morning Chronicle*, March 16. 1838.) The force of this jet reminds us of our idea of forming grand jets in the centre of some of the principal public squares, as well as in the canal in St. James's Park. The water might be made to rise in a hollow column, which would have as good an effect as if it were one solid mass of fluid. The idea readily suggests itself from observing the wick and flame of an Argand lamp. There would be very little waste of water in this description of fountain; because the same quantity would be continually sent up as it fell down. Hence, if the idea should occur, on great occasions, of colouring the water in imitation of wine, or of scenting it with essence of roses or of oil, or with any other essence that would diffuse an agreeable odour in the atmosphere, it might be carried into effect with great ease, and at very little expense. — *Cond.*

The Art Union. — The Society for the Promotion of the Fine Arts, established under this name at the commencement of last year, is making rapid advances in public estimation, and will consequently be able to extend its sphere of usefulness. We have already laid before our readers the mode pursued by the Society (Vol. IV. p. 262.). Every annual subscriber of one guinea is a member; the whole amount of money thus subscribed is apportioned by the committee into various sums, to be expended in the purchase of pictures; and every member, for each guinea subscribed, has the chance of obtaining the right of selecting a picture from one of the public exhibitions, to be retained by himself, but paid for by the Society. During the last year, although operations were not commenced until late in the season, the sum of 489*l.* was collected, and thirteen pictures, varying in price from 10*l.* to 100*l.*, were chosen by the holders of the respective prizes. In addition to the chance of obtaining a picture of value, and the *certainty* of aiding in the encouragement of art, which each subscriber of last year possessed, the committee have pledged themselves, in their advertisements for the present season, to

cause one of the pictures purchased by the Society to be engraved, and of this each subscriber will receive a copy.—*G. London, March, 1838.*

Asphaltic Cement.—No fewer than five different companies are advertising asphaltic cement. One is called the English Asphalt Company; another, that of London, Paris, and Hamburg; a third, Claridge's Patent Asphaltic Company, managed by a French gentleman; a fourth, the British Asphaltum and Patent Coal Company, and so on. This last company states that it has "been discovered, after various satisfactory experiments, that asphaltum of a superior description can be produced in England at a much less rate than that imported from the Continent." "It has also been ascertained that, by a combination of a bituminous material, likewise plentiful in Great Britain, an efficient substitute for coal can be produced, at less than half the present price." Some good, we trust, will ultimately result to the public from so much competition; but, in the mean time, as all these different asphalts are not likely to prove equally good, many persons who make trial of the article will probably be sufferers. We understand the British asphalt has been laid down in the front garden of the Marquess of Salisbury's house, facing the Green Park. The smell is said to be very powerful and disagreeable; but that will, of course, be dissipated by time and the weather.—*Cond.*

Howel's Double-action Door Hinges are at present exciting the attention of carpenters and builders. They are particularly adapted for folding and swing doors, as they admit of the door opening either way, and being folded flat back against the wall. As far as we are able to judge, this new hinge deserves the patronage of the public.—*Cond.*

SCOTLAND.

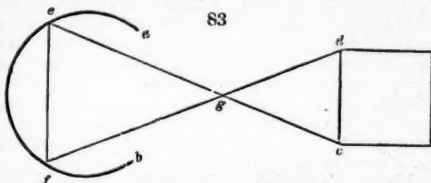
The Duke of York's Monument in Edinburgh.—A bronze pedestal for the statue of His late Royal Highness the Duke of York arrived at the Castle yesterday afternoon, from London. It had come to Leith by sea, and was conveyed from that port to the Castle upon a cart, drawn by three horses. The statue is to be erected within the precincts of the Castle, and not, as some have supposed, in some of the streets of the New Town. The pedestal is about 8 ft. in height, and the statue 10 ft., making in all about 18 ft. when erected. (*Scotsman.*)

ART. II. Retrospective Criticism.

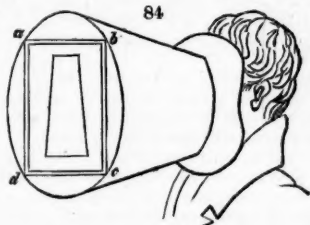
PARSEY'S Natural Convergence of Perpendiculars. (p. 92).—Many persons are guided by the opinions of others; and, as the observations of Mr. Pocock, jun., and Kata Phusin, unhesitatingly announce the impracticability of my system, they are calculated to arrest enquiry and do me an injury. Permit me briefly to answer their leading arguments, which never would have appeared in print, had I been heard on all I have to say, as Mr. Pocock remarks, in "fair discussion." I have only delivered two lectures at any of our London institutions, and justice cannot be done to this valuable subject in less than six. First, then, Mr. Pocock admits and demonstrates convergence and foreshortening of perpendiculars, as well as Kata Phusin, which unquestionably falsifies the old system; and yet he congratulates himself by saying, "fortunately for us, then, Mr. Parsey's theory is not correct." This he attempts to show by the curves on the retina, and the misplacing of pictures; the latter being a distinct question, and an after action to the production of a picture. Mr. Pocock may recollect that in my lectures I demonstrated that parallel ordinates project themselves of equal lengths when the eye is opposite to the centre line, and that their representation is decided by the subtenses, and not by the angles in the eye. As the supposed curvature of right lines shown by Mr. Pocock's diagrams, No. 31. and 34., p. 93., leads to many doubts, supposing the retina to be the seat of vision (which it is known I question), let *a b*, fig. 83., represent that concave surface; *c d*, the side of a cube; *e f*, the arc formed in it; then each side will produce a similar plane sector of a circle; although the surface of the retina must hold curves, the

rays must form pyramidal plane triangles, the base at right angles to the axis, and, consequently, the image seen a square. The receptive surface being spherical, the right-lined base of all images must be at right angles to the axis of vision; and all lines produced from right-lined objects will appear so, on the principle of a section of a sphere appearing a right line in its own plane.

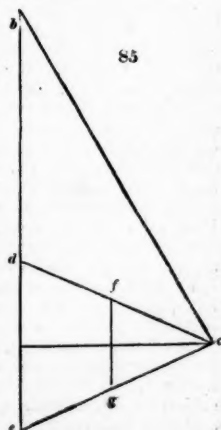
When an object is curved; that is, if $d c$ be a curve, $e f$ will be a complex curve, the plane sector becoming a curved sector; the base or image being then similar to those shown by Mr. Pocock in his figs. 31. and 34., p. 93. Thus,



it may be seen I do not deviate from mathematical principles, and my principles of vision are not falsified or rendered impracticable. Mr. Pocock's next argument is, that pictures, as well as natural objects, will put themselves into perspective: the first put themselves into perspective on the principles of solids, the latter on those of surfaces. But remark, it would be ridiculous to put a picture into any oblique position to view it; and any distortion of the image it is intended to represent, by placing it improperly or unnaturally, is a fault in the judgment. I cannot see it would be any misfortune to art or science for my theory to be correct. Mr. Pocock, in fact, admits my theory, but questions its practicability. I am prepared to submit to any one who holds such opinion specimens of the effects of the natural system with those of the old system, which never fail to produce a decision in my favour. If every one would enter upon the question as fairly and candidly as Mr. Pocock expresses himself, subjects of importance might be settled agreeably to all parties, and to the benefit of art and science.



Now, with respect to Kata Phusin's remark, that "it appears that perpendiculars do not, in general, appear to converge, because they are always at right angles to the direction in which the spectator is looking; and they never can be represented as converging, because no picture may subtend a greater angle than 60° either in breadth or height;" let me say perpendiculars are only at right angles to the spectator when the eye is midway between their extremes, any more than horizontals are. But to answer all his objections to the representation of this unavoidable natural effect, let a spectrometer be made as in the diagram, fig. 84. Let a conic front, expanding 60° , be constructed with a square frame ($a b c d$), attached to the base of the cone. On elevating or depressing the head, the frame or plane of the picture will always contain the objects to be represented, and what is really seen; the frame will always be truly perpendicular to the vision. Compare then the perpendiculars to the horizon with the visual perpendiculars, and trifling as well as consider-



able convergence will manifest itself to the eye; which comparative method brings the judgment to a conclusion on effect as well as principle.

I will only add that Kata Phusin errs in saying convergence is trifling, and only begins at a distance of 40 yards on viewing an object 200 ft. high. Let $a b$, fig. 85, be 200 ft.; $a c$, 40 yards, or 120 ft., with the eye at c : then, if the object be of the breadth $d e$ throughout, it will appear $d e$ at the bottom, and $f g$ at the top, being little more than half its actual width. Thus, it may be seen that convergence is more considerable than is anticipated; but, as probably no one has been able to satisfy themselves so fully on all the minutiae of the science of vision as I have, I can feel no surprise at meeting with suggestions from others which have imposed themselves on me in the course of my investigation of the subject; and every one will find me willing to meet any objections or opinions in fair and courteous discussion. — *Arthur Parsey*, 91, Regent Street, Jan. 2. 1838.

Mr. Lamb's brief Hints for the Preservation of the Architectural Remains of the Middle Ages. (p. 159.)—It is laudable to treasure up those works of by-gone days which are striking memorials of the industry and ability of a people, for they tell us their history, and the state of learning to which they had arrived, often with far greater truth than written records. It is well to regret the decay of those noble buildings which were raised by our forefathers for the celebration of Christian worship; they afford such abundant materials to the student in producing a design; but without them he feels unable to the task: like the writer, who in vain would sit down to a composition, without the help of books, which demands the diligence of enquiry, and the labour of research.

Every man of taste exerts himself in proposing means for the preservation of those edifices which show symptoms of ruin: their forms may, perhaps, never be lost by the power of the artist's pencil; but to look upon a time-worn pile itself, to see it grey with age, and gradually tottering to ruin, urges on us the wish to restore its fallen state; and, when it has so much suffered by time as to render its preservation impossible, then to store up in a proper museum (viz. one of architecture) fragments which tend so greatly to elucidate the manners, religion, and capabilities of a nation, is not only useful, but most praiseworthy. For these relics of the olden time, and what more particularly concerns us, the architectural remains of the middle ages, there should be a building raised solely to contain them; and the architect should aim at giving it a character by which we might judge of the end for which it was intended. Upon this principle, therefore, I am quite averse to the "Hints," or plan, of E. B. Lamb (p. 161.), in having the naves of our cathedrals used for disposing the fragments, since the uniformity of the aisles and nave would at once be destroyed; in short, I think the "beauty of holiness" would be desecrated. Our cathedrals would have the air of a museum; and, except when the thundering of the organ burst upon the ear, or the feelings of the beholder were aroused whilst he gazed with steadfast eye on the awe-inspiring vault above, and the light that streamed through the storied windows, the recollection of the sacred place where he was might never occur to him, whilst his thoughts were led away by dwelling on the various stones and pieces of sculpture which cumbered the walls. In edifices, I say, raised for far more noble views, the collections of art would be unseemly and highly improper; but if a portion of the *British Museum* were appropriated for the classification of the remains of our ecclesiastical and other buildings, or if a society were formed for this object, much good would be done. — *Antiquarius Londinensis*, April 4.

Arnott's Stove.—As we strongly recommended this heating apparatus in a former Number (p. 120.), we consider it our duty to lose no time in laying before our readers some account of the objections which have been raised against it. In the *Medical Gazette* for March 17., there is an article on the subject by Julius Jeffreys, Esq., of Kensington, the inventor of that most ingenious instrument, the respirator. The article is promised to be con-

finned through succeeding numbers; and we have received the permission of Mr. Jeffreys, and of the proprietors of the *Medical Gazette*, to copy the articles, or make such extracts from them as we think fit.

Mr. Jeffreys informs us, in his introduction to his first article, that he is a member of the medical profession; and hence his sending his strictures to a medical publication.

"About fifteen years ago, I commenced, in the East Indies, a series of experiments on the ventilating and cooling of buildings, employing, in some instances, an upward, and in others a downward, ventilation. I put to trial a variety of mechanical means, and among them a new instrument, which, for reasons that will be explained in their proper place, proved to be the most effective of any kind of *pumping* apparatus for ventilation which I have ever seen. Subsequently, I was led to introduce several chemical arts into that country, which, while they were wholly new to India, had to be conducted in a very different manner from similar arts in Europe. My operations were on so large a scale as to employ, sometimes, 1000 workmen; and were, for the most part, connected with the use of fuel. It became necessary to subject to trial most of the furnaces used in the arts, and then to modify them, or to devise others suited to the materials, fuel, and climate, of the country. By subjecting every operation to a series of unremitted experiments, complete success attended all of them in the end; although the difficulties, in some cases, proved such as could scarcely be credited. Indeed, most of my experiments were directed to the improvement of manufacturing operations, but of many of them the object was purely scientific. In all these operations, my agents were the rude workmen of the country, to whom every thing they saw was new. It became necessary for me to conduct the making not only of large boilers, and other vessels of iron, copper, and lead; of vats, of wood and iron; of pumps, and other hydraulic apparatus; of lathes, presses, and cogged machinery; of fire-brick and stoneware of various kinds; but of furnaces also of almost every imaginable form, such as horizontal and dome furnaces; vertical, cylindrical, and prismatic kilns; reverberatory furnaces (one of which, in my saltpetre manufactory, was 12 ft. by 10 ft. inside); furnaces with the fire in the centre; furnaces with side chambers; boiler furnaces of many kinds; vaporising kilns; and a great variety of experimental furnaces and fireplaces, much too numerous to detail. In many of these, as is the case in many of the arts, the same circulation of hot air obtained, and upon the same principles, as in Dr. Arnott's thermometric stove.

"Having long practised mechanical ventilation, and been extensively engaged in the use of fuel, my thoughts were, at times, turned to plans for warming and ventilating buildings in Europe. In the tropics, the occasion for employing any of these did not exist; but, upon my return to England, three years ago, having matured one of them, I had the apparatus necessary made in Birmingham. I had not, however, the opportunity of erecting it at the time, and I laid my plans aside for a while, and devoted my attention to the carrying into effect the principle of an instrument which is now before the public, and which was invented shortly after my return to this country. About a year after this, I heard that Dr. Arnott had taken up the subject of warming apartments; and, considering that it could not be in better hands, I determined to allow my own plans to remain at rest; but, upon the examination of his stove, and the perusal of his work, I have been compelled to consider the different kinds of apparatus I have above referred to, of one kind of which the fire is open, and of the other enclosed, to be constructed upon principles so superior, that I purpose, ere long, bringing them before the public.

"The revolution which Dr. Arnott would work in the opinions and practice of the public on the subject of ventilation, I believe to be, not undesirable only, but highly dangerous in its consequence; tending to make the visitations of epidemical and pestilential diseases far greater scourges than they are at present to our land; and, waiving even the question of ventilation, I am pre-

pared, and therefore bound, to show that the instrument which is the chief object of his work is by no means the one best suited to the purposes it is intended for; and that the modified forms proposed for open fires, to which he returns at the close of the work, are singularly defective." (p. 960—961.)

Mr. Jeffreys proposes, in a series of articles, to treat of ventilation.

"1. Ventilation in general. 2. Ventilating and warming by recovered animal heat. 3. Ventilating and warming by the aid of combustion. 4. Mechanical ventilation." (p. 961.)

We shall endeavour to give the essence of what Mr. Jeffreys brings forward on these subjects; or, if we find his ideas do not admit of compression, we shall avail ourselves of the permission which has been kindly granted us, and give them in his own words.

"1. *On Ventilation in general*; viz. on the quantity of air desirable for man.

"In the commencement of Dr. Arnott's book on ventilation, while treating of it generally, Dr. Arnott lays down the grand principle of *abundance* in the supply of air, in language so forcible and just, that any reader would consider him the zealous advocate of a system of liberal and copious ventilation.

" 'There is,' says Dr. Arnott, 'with respect to ventilation, a popular misconception and erroneous practice, of a nature the opposite of the total neglect described in the former paragraphs: because ventilation is important, there are persons, not satisfied with enough, but who demand, at heavy sacrifices, what is excess. It would be a similar error, if a man, from knowing that water is a necessary of life, should abandon the never-failing well in his garden and his convenient home, that he might drink always from the Nile or the Ganges. A man needs, per minute, as explained in Art. 10., the oxygen of one sixth of a cubical foot of atmospheric air; but, because of the mixture of his breath with the air around him, he requires, to be safe, a ventilation supply of from two to three cubical feet per minute. Now, the ordinary workmanship of house-builders in England leaves, as crevices round the doors and windows, passage for many times three gallons per minute; besides that there is the powerful ventilation of the frequent openings of the door when persons come and go. Yet there are in England many persons, who, under all circumstances, call out for open fires and open windows, and, by the cold currents and other concomitants of a ventilation, twenty or a hundred times more than necessary, prodigiously waste fuel, and injure or kill their children and friends by catarrhs, rheumatism, pleurisies, &c. To these persons it must appear wonderful, that in Russia, where, all through the winter, there are only close stoves and double windows carefully closed, and no provision made for ventilation beyond accidental crevices, the people are very healthy, and more individuals attain a very advanced age than in almost any other country in Europe. In a room of 12 ft. in all its dimensions, and containing, therefore, 1728 cubical feet of air, there is, without any ventilation whatever, an allowance of 2 ft. a minute, for one person, for more than fourteen hours.'"

(*On Ventilating and Warming, &c.*, p. 66.)

"This paragraph is, perhaps, the most influential in the book, on account of which, and of the doctrine it inculcates, it may be considered by far the most important. The reader who carefully studies each successive sentence, will perceive a gradually progressing departure in the mind of the author from that demand for copious ventilation expressed formerly, until he at last closes, by giving countenance to the Russian system of what we should call suffocation in England. Impressed with a conviction of the prodigious importance of a right settlement of the question upon which the author has agitated the public mind, I must request my reader's attention to an analysis of each sentence in this paragraph.

" 'There is a popular misconception and erroneous practice, of a nature the opposite of the total neglect described in the former paragraphs.'

"First, let us consider what is the thing here predicated, what is affirmed by 'the popular misconception and erroneous practice.' The popular misconception, and practice, is something which the people in general *think*, and

do, in regard to ventilation. Now, what they *do*, in almost every house in the land, is to close the doors and windows in cold weather, allowing more or less leakage through the crevices; and to employ a fire under an open chimney, which, while it warms the apartment, excites such a steady and powerful draught in the chimney, as to insure a pressure inwards of fresh air into the room at all the crevices; and what they *think* is, that this fresh air, if inconvenient, is at least highly salubrious to the majority of persons. This, then, is 'the popular misconception, and erroneous practice.' Again, in the former paragraphs, the 'total neglect' of supplying air was not the only thing described; salutary ventilation was also described, by comparing it to the constant flowings of a trout stream; and a copious supply of fresh air was contended for, by showing how the fishes would perish if deprived of this wanted supply of their native element. If illustrations mean anything, if a long line of argumentation means anything, the 'misconception, and erroneous practice,' of the people of England is a demand for, and a command of, a quantity of fresh air in their dwellings, which does, in reality, fall far short of the quantity advocated in those former paragraphs. It is next said, 'because ventilation is important, there are persons not satisfied with enough, but who demand, at heavy sacrifices, what is excess.' It was formerly argued in those paragraphs, not that ventilation only was important, but that *copious* ventilation was so; the 'enough' ought, then, to be understood as meaning such copious ventilation; but 'the demand, at heavy sacrifices, for what is excess,' means, by the whole context, only that demand which is usual in England; namely, the common quantity which enters by the crevices, and passes up our chimneys. If the copious ventilation contended for at the beginning of the chapter meant a less quantity even than this, to what purpose was the strong language there employed, and the still more striking illustrations? Again, as the author is, throughout, contending against things which are popular and general, and not merely against individual cases of eccentricity, it is a great pity that the poignancy of the doctrine now enforced against the usual supply of fresh air should be softened down by employing the expression, 'there are persons not satisfied with enough;' instead of saying, 'the people in general are not satisfied with enough.' By the latter expression, the reader would at once perceive that the ordinary quantity of air which it has been considered wholesome to let into our houses in the usual way, namely, through the crevices, aided by the chimney draught, is the quantity which he is here required to consider as excessive; so excessive, indeed, that the following comparison is employed to set it forth:—'It would be a similar error, if a man, from knowing that water is a necessary of life, should abandon the never-failing well in his garden, that he might drink always from the Nile or the Ganges.' The using of this comparison is no other than begging the question. Let it first be shown, by right reason and rigid experiment, that the air we are accustomed to let into our rooms bears a proportion to that we need, even as large as does the water in a never-failing well to the little that a man can drink. The experiment may appear not practicable; but it is, in fact, being made every day by thousands; and it tells wonderfully against the author's comparison and argument. A man very soon drinks to satiety, and can take no more with benefit: any more water is useless, or injurious to him, at the time. The quantity of air a man breathes has also its limit, but there would seem no limit to the quantity of fresh air* which is beneficial, as is proved by every comparison between those who occupy themselves within doors, and those whose occupation is in the open air. All the air, therefore, we ever have at any one time entering our houses falls short of the quantity which

* The care to have it warmed when it is to be enjoyed within doors, is quite another question; and I engage to present the public with apparatus which shall effect this thoroughly, and with abundant economy, and no over-heating of the air.

can do us good; but the water entering a never-failing well greatly exceeds the quantity which can do a man good at any one time; so that the air entering our houses falls short in comparison with the water of a never-failing well even, and how incomparably short of a Gangetic or Nilotic ocean! Before such a comparison had any reality in it, it would be needful to show that the people of England had left the insides of their houses to live upon the house-tops, or in open sheds. The author proceeds:—‘A man needs, per minute, as explained in Art. 10., the oxygen of one sixth of a cubical foot of atmospheric air; but, because of the mixture of his breath with the air around him, he requires, to be safe, a ventilation of from two to three cubic feet per minute. Now, the ordinary workmanship of house-builders in England leaves, as crevices around doors and windows, passage for many times three gallons per minute; besides that there is the powerful ventilation of the frequent openings of the door when persons come and go.’

“I will remark upon the latter part of this sentence first; since cubit feet have been, throughout, the term employed by the author to measure the air by, and, as he had just said, ‘from two to three cubit feet were needed,’ it is a pity that the expression ‘many times three gallons’ should have been used, when the actual supply was being spoken of, for the argument would lead a reader to suppose that many times three of the first measure were being promised him; and, unless watchful, he would overlook the new term ‘gallons.’ It is therefore to be regretted that, having commenced the argument in *cubic feet*, the author should have closed it in gallons. Now, a gallon being barely the sixth part of a cubic foot, many times three gallons may still be under one time three cubic feet. The quantity must exceed four times three gallons, or it will be under two cubic feet even. What the leakage really amounts to, in any one case, or whether the author meant cubic feet, and not gallons, as the measure of it, it is not possible to form any judgment of, without knowing what crevices there are, and what the pressure from without is. The quantity of air entering will vary according to the form and collective amount of all the crevices by which it is entering the room, and the facility by which it can pass out again, and also according to the square root of the difference between the external and internal pressure. In how disadvantageous a light this law places Dr. Arnott’s stove, when compared with open fires, will be shown hereafter. In the former part of the passage just quoted, reference is made to Art. 10. of the work, where we find it stated:—‘In respiration or breathing a man draws into his chest, at one time, about twenty cubic inches of air, and of that a fifth is oxygen, of which again there is converted into carbonic acid gas nearly one half.’ To suppose that the lungs employed so much as one half of the oxygen of the air of ordinary respiration, would be to familiarise ourselves with the idea that our lungs are tougher-working organs than they really are; and it might be argued by some, if they can endure to retain air in their vessels until one half of its oxygen has been vitiated, they cannot be very sensitive, very needful of perfectly pure air; whereas, if only one sixth or one eighth of the oxygen of the air we inhale is employed; if the air vessels, which the air of our ordinary respiration traverses, reject and have done with air, of which, being so delicate, they can only make use of this small quantity; how very pure ought the air to be in the first instance! I am aware of the experiments, on record, of able chemists, showing that, while in the chest, air loses from a fourth to one half of its free oxygen; and from these, it is to be presumed, the author has drawn his information. If he had afforded the subject more attention, he must have been led to draw a distinction between the two very different conditions in which the air in our lungs is. One, and by far the larger, portion is that which is deep-seated, occupying the finer ramifications and extremities of the air vessels: its quantity varies, probably, from 100 to 200 cubic inches. With this air the lungs are more or less distended during life; and it manifestly must undergo but a very gradual renewal; for, since a very little of it only is discharged with the air of each respiration, very many acts of ordinary

respiration must be performed before this air can be changed. If *this* air should be breathed out into a vessel, I have no doubt that one half of the oxygen it had contained would be found converted into carbonic acid; and I imagine that it must have been upon this deeper-seated air, which comes forth only by a forced expiration, or sigh, that the experiments referred to have been made. Indeed, for the purpose of catching a quantity of the air from the lungs, it is highly probable that a long and deep expiration was practised in those experiments, which were doubtless very correct, but which cannot rightly be applied to the air of our present question: this last air is in a very different predicament; being changed at every ebb and flow of each act of respiration, it is but a short time in the chest, and appears to occupy only the upper part and the larger vessels. In quantity it may not exceed from 15 to 25 cubic inches, and it is *this* air, of course, which, being the air of ordinary respiration, is that of which the author is treating.

"At his low estimate of fifteen respirations in a minute, about 300 cubic inches of air would be breathed each minute, or nearly 93 grains in weight; and in 24 hours, 133,920 grains, of which the oxygen would amount to 31,471 grains: if half of this, or 15,735 grains, were converted into carbonic acid, it would require fully three eighths of its weight, or 5900 grains, of carbon to combine with it, in order that it should be converted into that acid. Now, taking our driest food, bread, even it has so much moisture and other elements in it, that we shall find it does not contain, as it comes from the oven, more than about one fifth of its weight of pure carbon. A quartern loaf, therefore, may contain about the above quantity (5900 grains) of carbon. In order, then, to supply the carbonic acid generated in his lungs at the rate stated by the author, a man would have to eat a quartern loaf daily for this purpose alone, in addition to all the food necessary for his nutrition, and to supply the ordinary excretions of the body; and fearfully rapid would be the emaciation of those whose appetites fell short of such voracity! Had such an out-going of carbon been really necessary for our existence, we should certainly have been constituted, like the termites, or white ants, of the tropics, with appetites to enjoy, and powers to digest, ligneous fibre itself; otherwise, a man's whole labour devoted to tillage would barely supply him with the primary necessary of life alone. All civilisation and philosophy would be sacrificed to a furious and unproductive out-breathing of carbon. The author proceeds:—

"'Yet there are in England many persons, who, under all circumstances, call out for open fires and open windows, and, by the cold currents, and other concomitants of a ventilation twenty or a hundred times more than necessary, prodigiously waste fuel, and injure, or kill, their children and friends by catarrhs, rheumatism, pleurisies, &c.' Open fires are one thing, and open windows another. I confess myself to be a warm advocate for open fires (though I would have them employed in a different manner); but I do not know of any persons, who, under any circumstances, excepting, perhaps, to sweeten a house of a morning, call out for open windows from the month of October, at least, to that of April; and, under certain circumstances, only in the summer. It is, indeed, a pity that the author should connect together so very different desires as that for open fires, and that for open windows; and, by the help of an alliteration, by repeating in the reader's ear the sound of the epithet open, should endanger in his mind such a connecting of the two, as would charge the one with the absurdities of the other. Is it the ordinary ventilation excited by open fires through the crevices of *closed* windows and doors, or is it a ventilation unheard of elsewhere, through windows thrown open, which is said to be so prodigiously more than necessary, and so destructive to the public health? It were far better for the subsidence of error in the public mind to let the subject rest, than to handle it in such a manner: the continuance of any existing error were preferable to that which must arise from interweaving two very different categories (a state of things with open fires, and that with open windows), in such a manner as that the former shall

have to bear; by the implication, accusations which could with justice be applied only to the latter. Of the healthiness of country children, accustomed to ill-fitted doors and windows, I shall presently have occasion to speak; but who ever heard of sitting with windows thrown open, excepting in the dog-days? The context throughout, and the whole drift of the argument, clearly mean, that the ventilation which prevails universally in England in our houses is exorbitantly great, and the cause of all these diseases. The usual method of supplying untempered air through crevices only is a practice no one can more earnestly desire to see altered than myself, as the public will in due time be satisfied; but, while I would greatly desire a change in our system of ventilation, I would increase rather than diminish its quantity, convinced that these (the diseases of our climate) arise, in the great majority of cases, from that *occasional* and *unaccustomed* exposure, against which it is almost impossible to be always on our guard, but against the effects of which all our experience proves that we are rendered less and less susceptible, in proportion as we accustom ourselves to a more and more frequent renewal of the air in which we live; and there is no reason why it should not be renewed with tempered air; but in that case I am prepared to show that the thermometer stove is an apparatus by no means well calculated for the purpose." (p. 961—967.)

"I take the liberty of mentioning a case, remarkably illustrative of the fact, that freshness of air in a house lessens, instead of increases, the liability of the inmates to take cold; although I am aware, while apparently necessary, it was a bold experiment, which could not always be followed, inasmuch as it was unmitigated air which was so freely admitted.

"In her father's house, a lady had been accustomed to rooms in which the ventilation was greatly lessened by close fittings and felt. Yet, since open fires were used, there could not fail, as will be shown hereafter, to be more air admitted than by the use of Dr. Arnott's stove in the common way. In her own house, accordingly, she followed up this plan. The house was made very secure, and the children, though allowed plenty of exercise, were kept as snugly as possible from every draught; nevertheless, they were always catching colds; and the more she checked draughts, the more they ailed, catching also every epidemic that prevailed. Living in the country, she was led to contrast with her own the healthy children of the farmers around; and, observing their ill-fitted casements and doors, and open fires, with large-mouthed chimneys, resolved boldly to copy what she saw. Having removed to an old-fashioned house, with doors and windows fitting as badly as she could desire, she allowed them to remain as they were, and the children to run constantly, even in cold weather, in and out of the parlour door, which opened into the garden. Such has been her course for some years. Her children now know not what it is to take cold; and, although one has a constitutional tendency to an affection in the head, which grew alarming under a system of ventilation more liberal even than the thermometer stove alone can insure, they are now the pictures of health.

"I trust I shall be excused for having occupied my reader's time with this case, since it appears to me an instructive one; not because with a profusion of fresh air the family grew so healthy, for there are farm-houses in every part of the country presenting the same aspect, but because this, which was the extreme of what Doctor Arnott pronounces to be the catarrh and pleurisy-exciting system, did actually deliver them from the catarrhs which, under a different system, they were constantly suffering from. Once more, I would repeat that this extreme course is not held up for general imitation; that it would not answer in the case of delicate constitutions; and that for these the air should be rendered mild, but its salutary copiousness should, if possible, be retained.

"Having brought himself and his reader gradually over from the advocacy (if strong language and illustrations mean anything) of a system of more copious ventilation than is usual, to one of much more confined ventilation, it seems necessary, lest there should be any misgivings in the reader's mind,

any wonted longings after fresher air, that his thoughts should be familiarised with a Russian state of things, where almost no ventilation exists, and in such a manner, that penny-a-day ventilation may be associated together in his mind with long life and rubicundity. The author, therefore, continues, 'To these persons' (namely, all the people who are advocates for open fires), 'it must appear wonderful, that in Russia, where, all through the winter, there are only close stoves, and double windows carefully closed, and no provision made for ventilation, beyond accidental crevices, the people are very healthy; and more individuals attain a very advanced age than in almost any other country in Europe.' On reading this Russian argument, one is led to exclaim, What has become of the case of the poor Buckinghamshire lace-makers, and where is now its contrast, the delicious trout stream of the author's imagination? Alas, he has left it far off upon the opposite side, and has taken up his abode in a land of suffocation! As this argument, however, is not without plausibility, and as it may have weight with many readers in favour of what I believe would be a dangerous revolution in popular feeling, it is necessary to request of my reader an attentive examination of it.

"The squalid appearance of the inhabitants of very northern regions, after their six-months' inhumation, travellers have often noticed. I had supposed the appearance of the Russian poor, who were much at home, must have partaken to some extent of such effects of close confinement; and that although, as in most simpler states of society, individual cases of longevity might be more common there than in England, England had greatly the advantage over Russia as to the chances, or average duration, of human life. The case, however, with which we have to deal is not at all affected by the author's argument. The Russian might be able to live for ever without air, like a toad in a stone, and it would be no proof that the system would answer in England, where all our experience, as formerly shown by the author himself, is against it. The Buckinghamshire lace-makers, for instance, have been trying the experiment for years, even in a more moderate degree, for they have the opening of the chimney, and it has miserably failed, disease and early death being the effects of a stifling system, practised in a greater degree with impunity, if not with vigour, by the Russian poor. The reason of this there will be no difficulty in seeing.

"The quantity of ventilation necessary for man decreases in some very high degree with the temperature of the climate. It may not be easy to explain upon what physical cause this depends; how the animal system is so modified by climate, as to require the presence of so disproportionate quantities of air in different climates; but the fact is an unquestionable one in regard to the several climates with which Englishmen are most familiar, and our author's very argument establishes it in Russia. In tropical countries (in India, for instance), we find it necessary to build houses with gigantic doors and windows, to the English eye, at first, out of all proportion large and numerous. This is not done for the sake of coolness only; for the mean temperature, during the hot seasons, is much lower in houses which have massive walls, and few and small doors and windows. It is chiefly for the sake of fresh air. And, although these large and numerous doors and windows, ill-fitted as they are, allow of a leakage, when closed, manifold greater than our similar ventilation in England, it is still necessary to throw them all open for several hours every night, even when the outer air, as is oftentimes the case, is much hotter than the inner. In the western provinces of India especially, from the month of March to the middle of July, during the whole twenty-four hours, the air out of doors is hotter than that within. Nevertheless, although air passes freely through the house all the day, not by crevices only, but through doorways, before which are wetted surfaces, which, while they cool the air, give free passage to it, so that it might be supposed more ventilation could not possibly be needed, it does still prove necessary to throw aside, some time after sunset, every window and door for several hours. Any family neglecting this practice, soon declines in health. Here is

a case, where, in an oppressively hot climate, a great sacrifice of coolness has to be made to freshness. It will not be said that all this air is wanted merely to carry off the increased perspiration in a tropical climate, for the quantity is ten thousand times more than would be abundant for that purpose. Compared with this ventilation, any in England is as nothing. Is it not plain, then, that, as a ventilation, to be tolerable in India, must be a hundred-fold what will suffice in England, so a ventilation, to be tolerable in England, must be manifold greater than what may do in Russia? Hence, the Buckinghamshire women failed deplorably when they experimented with Russian ventilation, or rather non-ventilation, here, just as would any family in India which should try English ventilation in that country. The author's Russian argument, therefore, though a dangerous one, must, if rightly understood, go for nothing. The closing sentence of the paragraph remains to be noticed:—'In a room of 12 ft. in all its dimensions, and containing, therefore, 1728 cubical feet of air, there is, without any ventilation whatever, an allowance of 2 ft. a minute for one person for fourteen hours.' The author, though not meaning it, of course, speaks, in this place, as if the air could be used in distinct parcels until the whole was consumed, each parcel being put aside as it was done with, like a heap of waste paper, so as not to contaminate the rest. Whereas (as he has himself said elsewhere) every breath mixes with all the rest: the whole air is soon a little tainted, and ought then, without delay, to be renewed.

"The time has now come for us to notice a grand omission of the author. He has, throughout all his arguments, spoken only of the demand of the lungs for oxygen, and of the presence of the carbonic acid they give off. He has said nothing of the animal impurities, of a much more pernicious kind, thrown off profusely both by the lungs and by the skin. The air of an assembly, of which so little has been used by the lungs that the chemist cannot detect any diminution in its oxygen, nor any of the carbonic acid they have added to it, may in the meantime have become very oppressive on account of animal impurities of the other kind so freely discharged into it; and, if he were to lock up the assembly, until he could discover, with all his skill, the presence of any considerable quantity of carbonic acid, he would have sealed the fate of most of them, by forcing them to imbibe their own poison; matter, though less offensive, perhaps, yet as truly animal off-scourings, as thoroughly excrementitious, as any that goes forth into the draught. I make no apology for using expressions which, under other circumstances, would be unpardonably coarse. It would be a mistaken affectation which should hesitate to do so upon the present, a question of vital importance. The above is a fact, which no physiologist will venture to deny: it is one which cannot be too generally known by the public. Moreover, the confined habit of body of a large portion of our city population, especially of the sedentary classes, is such, that the skin and the lungs, in addition to these their natural duties, have to throw off in vaporous discharges much that ought to pass off in another way. So deleterious are all these matters to the health, that, as the author himself has shown in his introduction, pestilential diseases have decreased in our land, in proportion as our streets and our houses have become wider and more airy. What now must be thought of objecting to the bare ventilation which our houses, with their open fires, commonly afford us; nay, to the indulgence in any quantity of air which we can severally afford to warm?

"Such is the beneficial influence of fresh air over the body, that, as experience proves, with all the trying vicissitudes of weather opposing him, the more nearly a person can live in the open air, the better, for the most part, will his health be. The ploughman enjoys more vigorous health than the equally hard-working mechanic; and the coachman, seated on his box, than the accountant at his desk. It cannot be said that exercise is the chief agent in effecting this difference, for a joiner in his workshop, even with much more air flowing into it than the quantity the author has set as a maximum, does not, in general, present the hearty aspect of a coachman or a guard, although the

work of the former throws all his muscles into the most useful exercise, and the occupation of the latter has the defect of being sedentary; showing that exercise, even confessedly beneficial as it is, cannot make up the difference between the effect, not of a very confined, but of a fairly ventilated, place and the open air. With regard to exercise, it is of importance to remark how subservient is its influence to that of the open air. It loses greatly of its beneficial powers, nay, often proves injurious, when deprived of fresh air to give effect to it. It is very common to hear warehousemen and mechanics complaining that the work is too much for their health; work less laborious, in general, than that with which the hedger and ditcher, or the lighterman, is familiar. The effect of the exercise of the former persons appears often to fall unequally upon the system, and therefore too heavily upon some one part; while upon those who work abroad it would seem to be more equally diffused. Determinations to the head, the heart, the lungs, &c., being, I believe, much more common effects of labour within doors than of labour without.

"If the presence of the air of heaven around the body, *without measure*, is unquestionably beneficial, the benefit increasing, if the weather is mild, with the speed with which it passes over the body, a windy being more invigorating than a calm day, and a seat outside of a coach than one even with the windows open inside, are there any properties in brick and mortar which empower them to subvert this order of things within doors? It is true that the body at rest cannot endure cold or draughts. These, of course, must be afforded the fullest consideration; and it will then be obvious that the only limit to that quantity of fresh air which is desirable, that quantity which is to exercise the most salutary influence on the human frame, is to be found at the point where the current excited in the air commences to be too strong, or the expense of warming it too considerable. What limit is there, then, to the quantity of fresh air a person should be allowed within his house, if he can introduce it without draughts, and if he can afford to warm it? Nay, if such a person should be philosophical, and should have ascertained that one sixth of a cubic foot of air per minute will do for the breath, and should prudently have allowed two cubic feet, on account of the constant mixing of the damaged with the fresh air, and should liberally, as he thought, have apportioned to himself two or three cubic feet of air per minute, and should be satisfying himself that the air of his apartment ought therefore to be warmed for less than a penny a day; would it not be the duty of any friend, upon whose mind the previous and a multitude of other evidence which might be cited to the same effect, were exercising their proper influence, to contend against economy such as this, as of a very erroneous kind? Might he not say, I will not dispute your philosophy, whether I can admit your measurements or not; but I affirm that, unless miserably poor, you ought to be seeking fresh air in quantities compared with which all that is indispensable for mere existence is but an indefinitely small fraction. You have before you irrefragable, irresistible proof, that, to air flowing over them in boundless quantities myriads of your fellow men do chiefly owe their hale and vigorous health. It is but a small part of this which, sedentary and within doors, you can command; but do not reduce this quantity, limited as it must be, five hundred-fold more. Enquire not upon how trifling a sum you can manage to warm air for your rooms, carefully metered out in cubic feet; but, of the two, rather enquire what is the utmost sum you can afford towards warming and introducing it in unmeasured quantities into your house. If you will alter your supply, increase its quantity by all means, but on no account think of diminishing it. Behold the hale looks of your neighbour, whose occupation keeps him always abroad; and ask yourself if any, or if all of your luxuries together, are capable of doing for your health what boundless fresh air is doing for his, and be guided by your own reply. You will then give your luxuries up, one and all, rather than part with any of the little air compared with his, which you already have.

"To the poor man this argument may with great, if lessened, force be applied. To him it may be said, that no person ever yet could prove the *habitual* use of

any quantity of beer or spirits to be necessary, nay even to be beneficial, to the health; that they may be a luxury, but not certainly a necessary; whereas no one can deny the very beneficial effects of abundant fresh air. Give up, then, your useless beer and pernicious spirits, and devote a part of the saving to the warming of more air for your family. Let him be offered every assistance towards employing his fuel more economically, but never by any plan which does not insure to him his former supply of fresh air, at the least. Any plan which involves with it a yielding up of a portion of fresh air should be considered as applicable only to the cases of the destitute, who have no lesser necessities to part with, rather than to sacrifice any portion of so great a one.

"Defective as the open cottage fire is in some respects, the ventilation, which it not only permits but vigilantly insures, is a redeeming quality of far greater importance. If the chimney draught were put an end to by the use of close stoves, in the manner recommended by the author, impure and infectious effluvia would not, as now, be hurried away up the chimney ere they had time to excite disease, but they would circulate for hours about the rooms of the poor before they were completely removed through the crevices; and it is too probable that, when an epidemic was lighted up, it would not, as now, commonly attack a few of the inmates only, but would, as in some countries, waste itself upon the whole family with aggravated force. I will not here anticipate matter belonging to my third division — warming and ventilating by the aid of combustion. Under that head, it will be shown that the favourable comparison the author has drawn regarding the ventilating powers of the thermometer stove will not stand the trial either of careful reasoning or of experiment.

"In concluding this portion of my subject, I have to express a hope that my humble endeavour to defend the general opinions of Englishmen in favour of the free ventilation insured by open chimneys, against the arguments opposed to them by the author in the treatise before us, especially in Art. 82., upon which I have commented at some length, will not appear to my reader either as uncalled for or unsuccessful. It has been rendered especially necessary by the promising manner in which the author commences his work as the advocate of ventilation, so copious, that any reader must understand by it a larger, instead of a less, supply than is usual in our dwellings, and may thereby be placed off his guard, and be in all the greater danger of lapsing into the subsequent bias of the author's mind. The vast importance of the questions to the well-being of the community on the one hand, and the weight of the author's authority on the other, do also add to the necessity of a commentary such as I desire to conduct with right reasoning and candour.

"Viewing the thermometer stove as consisting of two distinct parts, the stove itself, and the thermometric regulator, with regard to the advantages of the former I have to observe, that, if my reader has made up his mind to close up his chimney, he will, I believe, find the stove itself to be superior to any other *close-air stove* at present in ordinary use for domestic purposes; and that the superiority will prove mainly to consist in the surrounding of the fire with brick, and the command over the draught by close fittings, and by a regulator on the ash-pit door. These points have for centuries been attended to minutely by careful chemists and artists, and a perfect command has thereby been obtained over the heat of the fire, and over the consumption of the fuel. These provisions have also been imitated in many domestic stoves; but in so rude and inefficient a manner, that, in practice, little command has been obtained over the draught, and little, therefore, over the consumption of fuel and heat, although the subject has not been neglected by former writers. For having drawn their attention to these important points again, the public are indebted to Dr. Arnott." (*Med. Gaz.*, April 7., p. 49.)
